

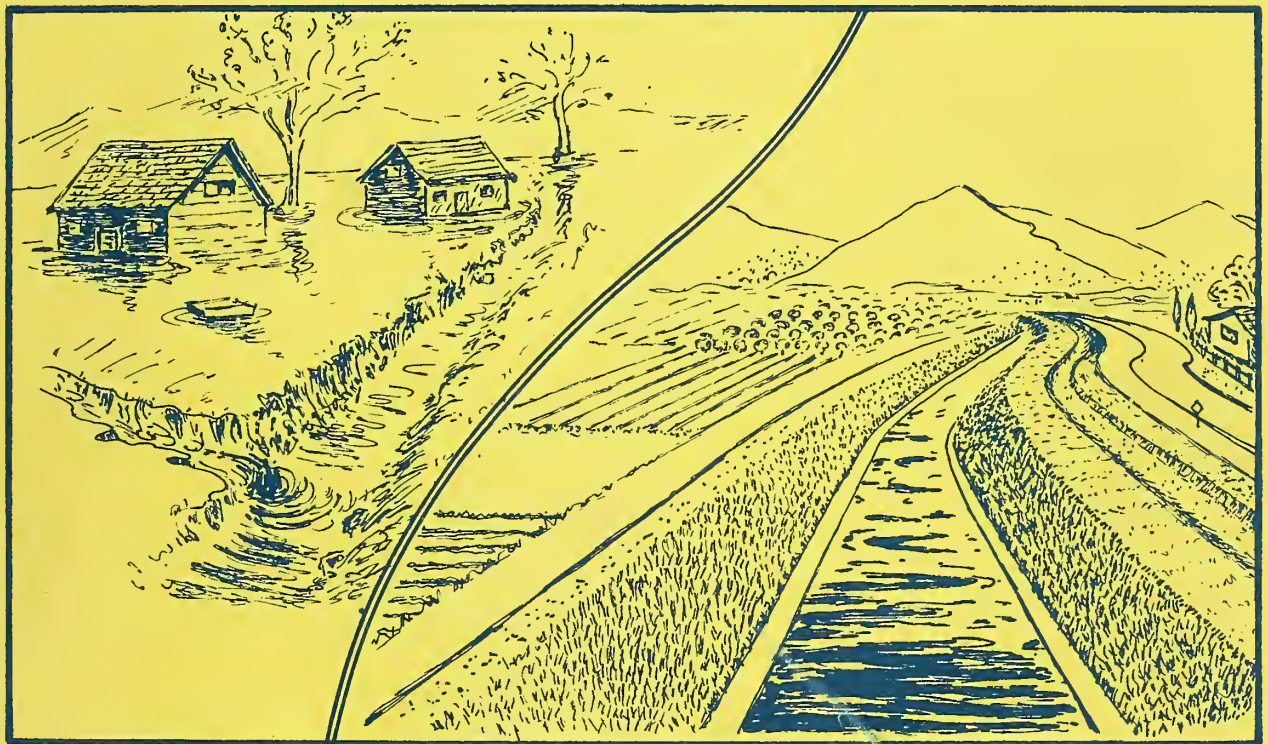
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**FINAL
ENVIRONMENTAL IMPACT STATEMENT**

**ROOSEVELT WATER
CONSERVATION DISTRICT
FLOODWAY**

ARIZONA



**UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**



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FINAL

ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY

Maricopa and Pinal Counties, Arizona

ENVIRONMENTAL IMPACT STATEMENT

Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service

Sponsoring Local Organizations

Flood Control District
of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

Board of Supervisors
of Pinal County
P.O. Box 827
Florence, Arizona 85232

East Maricopa Natural Resource
Conservation District
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Chandler, Arizona 85224

June 1978

Prepared By:

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
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Phoenix, Arizona 85025

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USDA Soil Conservation Service
FINAL ENVIRONMENTAL IMPACT STATEMENT
ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY

MARICOPA AND PINAL COUNTIES

ARIZONA

Prepared in Accordance with Sec. 102(2) (C)
of P.L. 91-190

SUMMARY

- I. Final
- II. Soil Conservation Service, United States Department of Agriculture
- III. Administrative
- IV. Project Purpose

A structural measure for watershed protection and flood prevention located in Maricopa and Pinal Counties, Arizona, is to be implemented under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, 68 Stat. 666, as amended). The flood prevention purposes will be achieved by installing 27.36 miles of floodway.

V. Summary of Environmental Impacts

The Roosevelt Water Conservation District (RWCD) Floodway as planned will reduce floodwater and sediment damage on irrigated cropland, rangeland, urban land, and cultural features on these lands. The degree of flood protection will vary with the distance downslope from the floodway.

The floodway will provide an outlet for flood flows, for existing and planned floodwater structures, through the Gila River Indian Reservation to the Gila River, thus assuring the damage reduction planned for the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds. The floodway will intercept and divert floodwaters and also provide an outlet for flood prevention measures being planned for the Lower Queen Creek Watershed.

Increased flows and sediment will be experienced in the Gila River. Erosion will be reduced on the areas protected from flooding.

Installation of the floodway will have direct effect on 1,697 acres of vegetation. Of this total, construction activity will result in loss of 430 acres of cropland, 278 acres of desert riparian, and 505 acres of desert shrub. Diversion of flood flows will adversely affect 132 acres of desert riparian vegetation which is within an area bounded by the floodway and Highways 87 and 93. The wildlife habitat losses will be mitigated.

The floodway and disposal areas will have a visual impact on the area. Landscaping will lessen these effects.

Installation of the floodway will require the relocation of four families and three businesses. Utility, irrigation, and transportation facilities will be relocated.

Health, welfare, safety, and quality of living for residents in the project area will improve because funds formerly used for flood damage repair will be used for other community purposes.

When project measures are installed, the watershed economy will be stimulated by allowing more efficient use of agricultural lands, eliminating market delays, and creating 235 man-years of employment and three permanent jobs.

VI. Alternates Considered

1. Accelerated conservation land treatment alone.
2. Structural protection of existing urban developments only, with further productive cropland preserved.
3. Protecting prime agricultural land from premature or unnecessary urban encroachment.
4. Varying the RWCD Floodway size.
5. No project.

VII. The following agencies, organizations and groups have been requested to submit comments:

Federal Government

Advisory Council on Historic Preservation
Council on Environmental Quality
Department of the Air Force
Department of the Army
Department of Commerce
Department of Health, Education, and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Transportation
Environmental Protection Agency
Federal Highway Administration
Federal Power Commission
Office of Equal Employment Opportunity, USDA

State and Local Government

Governor of Arizona
Arizona Bureau of Geology and Mineral Technology
Arizona Commission of Agriculture and Horticulture
Arizona Department of Health Services
Arizona Department of Public Safety
Arizona Department of Transportation
Arizona Game and Fish Department
Arizona Historical Preservation Officer
Arizona Office of Economic Planning and Development
Arizona Power Authority
Arizona State Land Department
Arizona State Museum
Arizona State Parks
 Natural and Cultural Resource Conservation Section
Arizona State Parks Board
Arizona Water Commission
Center for Public Affairs, Arizona State University
Central Arizona Association of Governments
Council for Environmental Studies, University of Arizona
Department of Anthropology, Arizona State University
Indian Affairs Commission
Maricopa Association of Governments
Mineral Resources Department
Prescott Historical Society
Governor's Commission on Arizona Environment
City of Chandler
City of Gilbert
City of Mesa
Flood Control District of Maricopa County
Maricopa County Board of Supervisors
Maricopa County Highway Department

State and Local Government (Cont'd)

Maricopa County Parks and Recreation Department
Maricopa County Manager
Maricopa County Planning Department
Pinal County Board of Supervisors
Pinal County Highway Department

Other

American Telephone and Telegraph
Arizona Conservation Council
Arizona Public Service Company
Arizona State Reclamation Association
Arizona Water Resources Committee
Arizona Wildlife Federation
East Maricopa Natural Resource Conservation District
El Paso Natural Gas Company
Environmental Defense Fund
Environmental Impact Assessment Project
Friends of the Earth, Washington
Friends of the Earth, Arizona
General Motors Proving Ground
Gila River Indian Community, Governor
Gila River Indian Community, Natural Resources Committee
L. H. Bell and Associates
League of Women Voters of Arizona
Maricopa Audubon Society
Mountain Bell Telephone Company
National Audubon Society
National Wildlife Federation
Natural Resources Defense Council
Phoenix Historical Society Museum
Roosevelt Water Conservation District
Salt River Project
Sierra Club
Southern Pacific Transportation Company

VIII. Draft statement transmitted to Council on Environmental Quality
on August 15, 1977.

PROJECT IDENTIFICATION AND ENVIRONMENTAL SETTING

USDA SOIL CONSERVATION SERVICE FINAL ENVIRONMENTAL IMPACT STATEMENT 1/

For

ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY, ARIZONA

Installation of the project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83rd Congress, 68 Stat. 666, as amended.

SPONSORING LOCAL ORGANIZATIONS

Flood Control District of Maricopa County
Pinal County Board of Supervisors
East Maricopa Natural Resource Conservation District

INTRODUCTION

This program environmental impact statement is being written for only the enlargement and extension of the Roosevelt Water Conservation District (RWCD) Floodway. It addresses itself to the impacts in each of three authorized watersheds, which are Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler. These three watersheds comprise the project area. This environmental impact statement also addresses the impact which the Queen Creek Watershed has on the floodway. This watershed is authorized for planning under authority of Public Law 83-566.

Before man altered the drainage pattern in the project area, water flowed in a northeast to southwest direction through numerous washes into the Gila River. Floodwaters spread over the undeveloped desert. The introduction of irrigated farming and the construction of the associated irrigation canals altered the course of the floodwaters. Subsequent improvements such as farm ditches and land leveling obliterated the washes. Floodwaters can no longer follow their natural courses and are forced across developed land and, in general, follow constructed floodways, irrigation ditches, and roadways.

As development continues and property values increase, failure of the manmade waterways to convey floodwaters creates ever increasing damages. Inundation of the area, which historically served as the flood plain, must be reduced.

Flood problems have been recognized for many years. In 1959 the voters of Maricopa County approved the establishment of a county-wide

flood control district. They authorized annual taxation to produce revenues for the purpose of studying flood problems in the county and to construct flood prevention measures.

In 1962 the Flood Control District of Maricopa County published a comprehensive flood control program report. 2/ In recent years the Maricopa County Planning and Zoning Commission has published general land use plans for study areas within the county. Both the U.S. Army Corps of Engineers and the Soil Conservation Service have published reports that outline flood control projects.

In 1963 the Soil Conservation Service published three watershed work plans that proposed a comprehensive flood control program for the area between the Salt River and Queen Creek and east of Mesa and Chandler. These reports were prepared under the authority of P.L. 83-566.

The Buckhorn-Mesa Watershed Work Plan covered the area between the Salt River and Apache Trail. The Apache Junction-Gilbert Watershed Work Plan covered the area between the Apache Trail and Ray Road. The Williams-Chandler Watershed Work Plan covered the area between Ray Road and Queen Creek (see the map on the following page). Land treatment, nonstructural measures, floodwater retarding structures, diversion structures, and floodways are included in the three plans to control the flood flows originating east of the Roosevelt Water Conservation District Irrigation Canal.

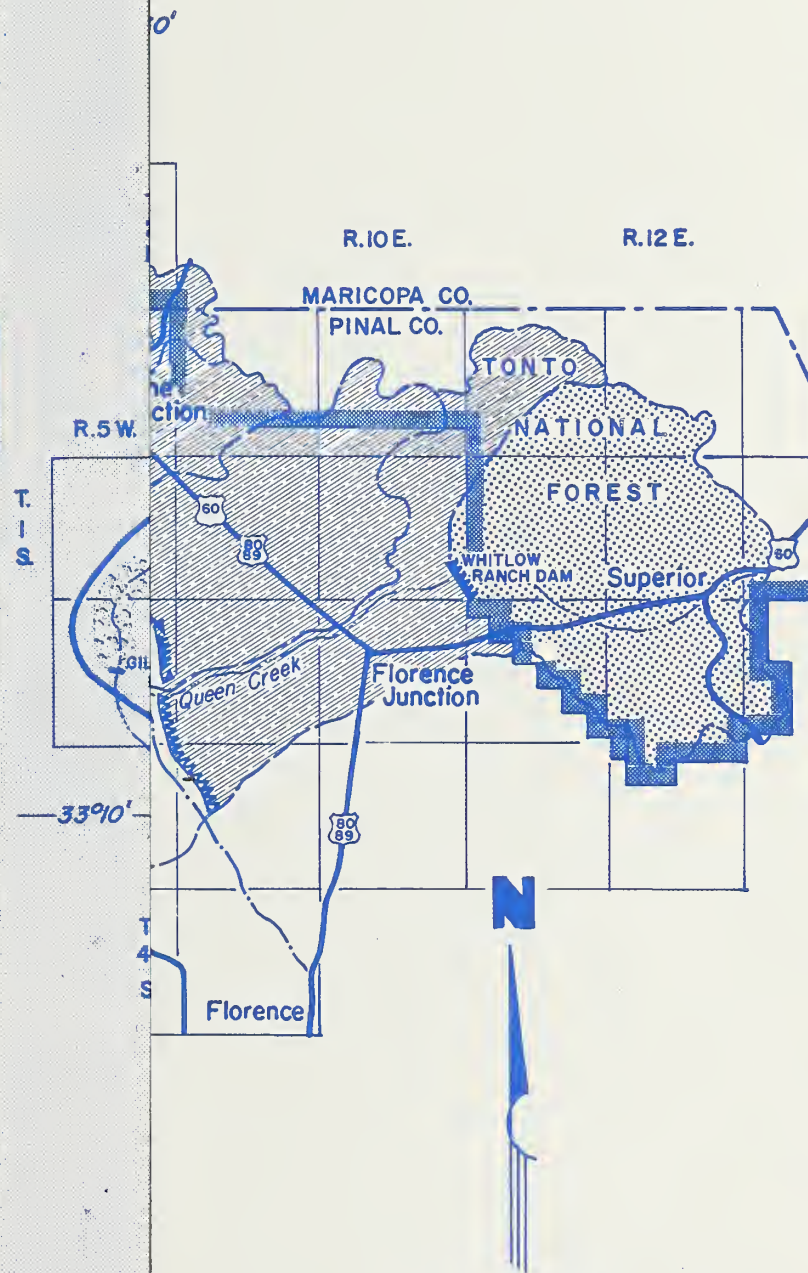
The three work plans have been approved for construction. They are being supplemented to provide additional capacity in a floodway that is adjacent to the Roosevelt Water Conservation District (RWCD) Irrigation Canal and to provide an outlet for the floodway through the Gila River Indian Reservation to the Gila River.

The land treatment measures that were planned have been installed. A portion of the structural and nonstructural measures were installed during the period 1966 to 1969 by the Flood Control District of Maricopa County. Construction of the remaining dams and the RWCD Floodway has been delayed because of the inability of the sponsoring organizations to raise funds for acquisition of rights-of-way.

Flood control dams now control 296 square miles of the 711 square miles of drainage area above the proposed RWCD Floodway. Construction of the remaining dams that have been authorized would control an additional 43 square miles.

Following is a brief summary and status report for each of the three authorized Public Law 566 watershed projects and the one project authorized for planning. (See Appendix B Project Map.)

SOIL CONSERVATION SERVICE

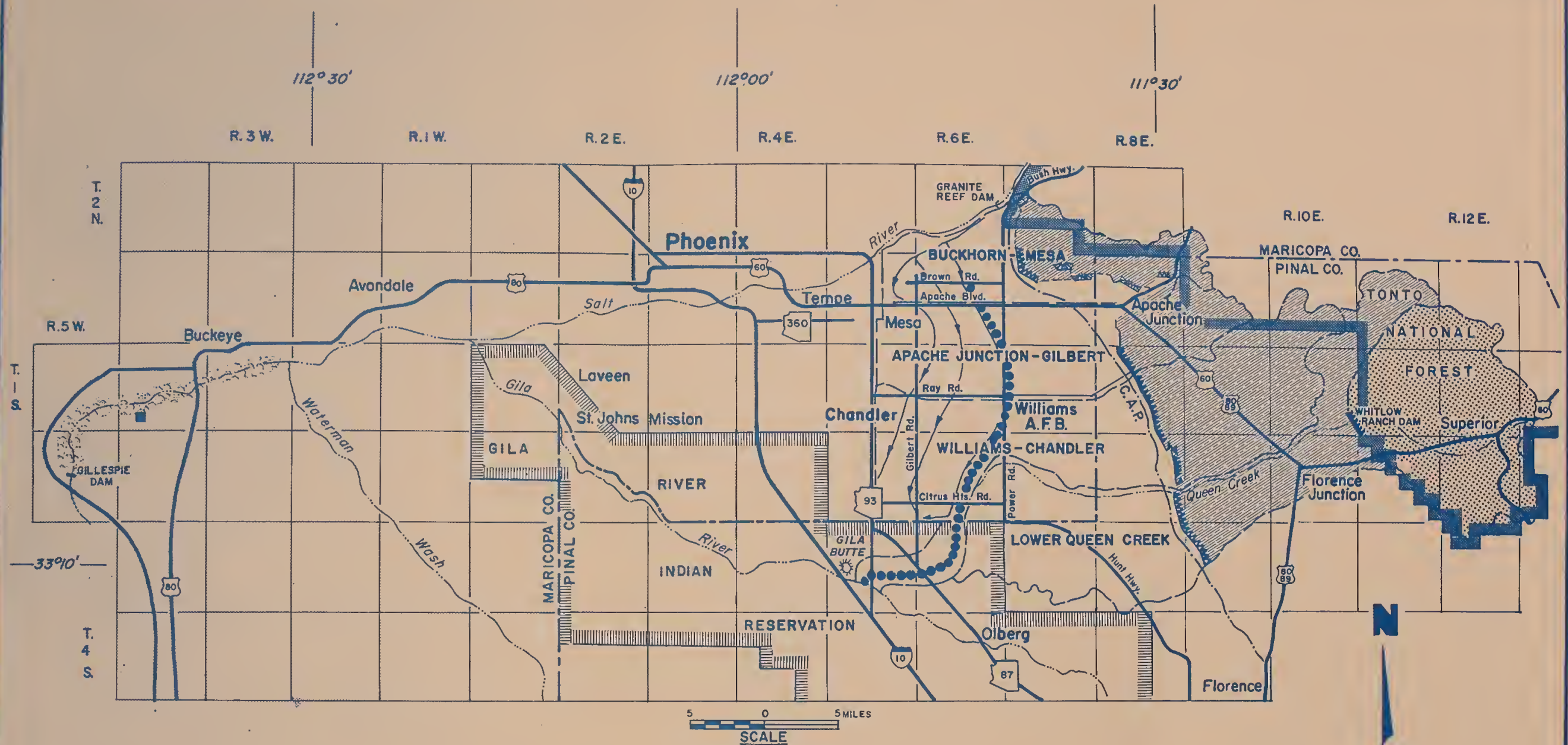


LOCATION MAP
ROOSEVELT WATER
CONSERVATION DISTRICT
FLOODWAY

MARICOPA AND PINAL COUNTIES,
ARIZONA

SEPTEMBER 1976

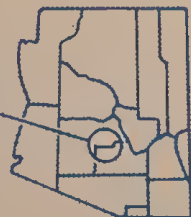
ROOSEVELT
WATER
CONSERVATION
DISTRICT
FLOODWAY



LEGEND

WATERSHED BOUNDARY	-----	CENTRAL ARIZONA PROJECT CANAL (PROPOSED)	----- C.A.P.
NATIONAL FOREST BOUNDARY	-----	ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY
INDIAN RESERVATION BOUNDARY	-----	INTERMITTENT STREAM	-----
COUNTY LINE	-----	FLOODWATER RETARDING STRUCTURE	-----
RANGE & TOWNSHIP LINE	-----	DRAINAGE AREA CONTROLLED BY STRUCTURE (S.C.S.)	-----
PAVED ROAD	-----	AREA CONTROLLED BY WHITLOW RANCH DAM (C.E.)	-----
CANAL	-----	ROBBINS BUTTE STATE GAME MANAGEMENT UNIT	-----
CHANNEL WORKS FOR FLOOD PREVENTION	----- (PROPOSED)(EXISTING)	FRED J. WEILER GREEN BELT	-----

ROOSEVELT
WATER
CONSERVATION
DISTRICT
FLOODWAY



LOCATION MAP

LOCATION MAP
ROOSEVELT WATER
CONSERVATION DISTRICT
FLOODWAY

MARICOPA AND PINAL COUNTIES,
ARIZONA

SEPTEMBER 1976



Buckhorn-Mesa Watershed. Project measures include land treatment, nonstructural measures, and five floodwater retarding structures with associated structure outlets and floodways. The plan provides for the diversion of the controlled flows from four of the floodwater retarding structures into the Salt River upstream of Granite Reef Dam. The fifth floodwater retarding structure will outlet into the wash below the dam. The plan also includes an extension of the RWCD Floodway from Apache Trail to 230 feet north of Brown Road. None of these measures have been installed. A final environmental impact statement is available.

Apache Junction-Gilbert Watershed. This project provides for the control of flood flows originating above the developed areas. It includes land treatment, nonstructural measures, a floodwater retarding structure, a diversion, and a floodway. The controlled flows from this watershed and the Williams-Chandler Watershed, to the south, are discharged through the Powerline Floodway to the RWCD Floodway. As a part of this project, the existing RWCD Floodway will be enlarged to provide capacity for the 100-year event. The work plan for this project is being amended to provide for this enlargement.

The floodwater retarding structure and the Powerline Floodway have been installed. The enlargement of the RWCD Floodway remains to be done.

Williams-Chandler Watershed. This project provides for the control of flood flows above the developed areas from Ray Road to the boundary of the Queen Creek drainage area. It includes land treatment, nonstructural measures, and two floodwater retarding structures which discharge their controlled flood flows through the Powerline Floodway into the RWCD Floodway. It also includes the enlargement of the existing RWCD Floodway. The work plan for this project is being amended to provide for constructing an outlet for the RWCD Floodway from the junction with Queen Creek through the Gila River Indian Reservation to the Gila River. The floodwater retarding structures have been installed. The enlargement and extension of the RWCD Floodway remains to be done.

Lower Queen Creek Watershed. In 1970 the East Maricopa Natural Resource Conservation District (NRCD), the Gila River Indian Community Tribal Council, Roosevelt Water Conservation District, Board of Supervisors of Pinal County, Florence-Coolidge NRCD, and the Flood Control District of Maricopa County submitted an application to the Soil Conservation Service for P.L. 566 assistance for flood control below the Corps of Engineers' Whitlow Ranch Dam. Preliminary investigations are still underway to formulate an acceptable system of control within the Lower Queen Creek Watershed. Two alternatives being investigated have produced the degree of control consistent with that used in this plan for the floodway. Sufficient assurance has come from these investigations to warrant the use of the controlled outflow as a basis for design. This controlled outflow includes the effect of the existing Whitlow Ranch Dam together with additional project measure considerations.

If the anticipated control of Queen Creek is not attained, the capacity of the floodway will be exceeded by the peak discharge from a flood expected to recur on the average of once in 30 years (3.3 percent chance of being equaled or exceeded). If the anticipated control of Queen Creek is attained and the flood prevention structures constructed in the Buckhorn-Mesa Watershed the intervening area downslope of these structures and upslope of the floodway outlet is 258 square miles. A separate environmental impact statement will be written for any project proposed for the Lower Queen Creek Watershed.

PROJECT PURPOSES AND GOALS

WATERSHED PROTECTION (CONSERVATION LAND TREATMENT)

The Sponsors' goals for installing land treatment and protection of watershed lands during the project installation period include the following:

- a. Reduction of erosion rates and sediment yield to acceptable limits.
- b. Increase infiltration rates of the soils.
- c. Increase crop production.
- d. Improve irrigation water management.

FLOOD PREVENTION

The goals the local Sponsors have set for flood prevention in the three watersheds include reducing flood plain scour and erosion and providing a high level of protection for:

- a. Highly productive irrigated lands.
- b. Residential and retail-commercial properties, roads, and highways.
- c. Salt River Project and Roosevelt Water Conservation District's (RWCD) Irrigation Canals and on-farm irrigation facilities.
- d. Lands now undergoing rapid urbanization.

The overall objective of the plan is to restore, maintain, and enhance the quality of human environment through watershed protection and flood prevention. However, it is recognized that the planned project may not provide for all of these goals.

PLANNED PROJECT

LAND TREATMENT MEASURES

The land treatment measures proposed in the original work plans for the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds were designed to reduce runoff, erosion, and sediment. They also contribute to better irrigation water management and increased crop production.

The measures installed include conservation cropping systems, cover and green manure crops, crop residue management, irrigation water management, minimum tillage, land leveling, irrigation field ditches, irrigation pipelines, and irrigation ditch lining.

A continuing program of irrigation water management is in effect and will result in more efficient use of irrigation water. Installation of the land treatment program has increased efficiency of irrigation water use by 10 percent over the last ten years to an overall efficiency ranging from 60 to 65 percent.

When vegetation and soil armoring are disturbed during construction of homes, accelerated erosion occurs. Landscaping around newly constructed homes usually shortens this period of accelerated erosion.

The East Maricopa Natural Resource Conservation District (NRCD) in accordance with its long-range plans and objectives, has the responsibility for coordinating the land treatment programs within its boundaries. The land treatment program is flexible and accommodates to changes in land use. The district requests assistance from the Soil Conservation Service and other agencies. The East Maricopa NRCD continues to provide technical assistance through ongoing programs for non-federal lands when property owners request assistance.

Land treatment measures have been installed on the Tonto National Forest lands. Rangeland treatment measures below the Tonto National Forest are limited to the existing management programs. Land treatment measures installed on the Tonto National Forest have reduced sediment yield. The measures installed were fencing, water bars, seeding, and erosion control structures.

Fence construction enables the operator to control grazing. Closure of the managed areas has been sufficient to establish a protective vegetative cover.

Water bars and erosion control structures have been constructed to reduce erosion. Loose rock check dams in gullies have reduced water velocities and have trapped sediment.

Seeding has speeded up the revegetative process and retarded soil movement; both are essential to good watershed conditions.

Title 7 CFR Part 656, which became effective on July 18, 1977, sets forth Soil Conservation Service procedures for the protection of archeological and historic properties encountered in federally assisted programs. These procedures will be followed.

The national resource land is managed by the Bureau of Land Management under the multiple-use concept. This land is presently used mostly by outdoor recreationists and hunters.

NONSTRUCTURAL MEASURES

Nonstructural measures were considered in formulation of the project. The damage area is an alluvial fan. Each acre has approximately an equal chance of being inundated by a specific frequency event.

Two nonstructural measures are in effect in the project area. The first is that Arizona revised statutes require the county to adopt flood plain regulations and to delineate flood plains where urban development is imminent or on-going. The Maricopa County regulation is a two district regulation which defines a floodway district and a floodway fringe district within a flood plain. No structures or obstructions of any kind are allowed in the floodway district, and development in the floodway fringe district must be elevated or otherwise protected from a 100-year flood. All residential floors must be constructed above the elevation of the 100-year flood and all industrial or commercial developments must either be elevated or floodproofed to the 100-year flood elevation.

The second is that regulations require onsite storage of runoff water in urban developments. When subdivision plats are submitted to county planning and zoning departments, the drainage system size is reviewed to determine if runoff water can pass through or around the subdivision without damage to housing.

The Maricopa County Board of Supervisors recently approved changes to the subdivision regulations that require detention facilities be included in all new subdivision plats to detain a 100-year, two-hour storm. The Board of Supervisors will enforce these regulations in such a manner that the volume of storm water to be stored for the area between the system of floodwater retarding structures and the RWCD Floodway will equal or exceed one (1) inch over the newly developed area.

The city of Mesa recently passed regulations that require developers to make provisions in all new subdivisions to store onsite runoff. The amount required to be stored for a minimum of 24 hours is the runoff from a 50-year, 24-hour storm.

The City of Chandler has adopted regulations that require developers to make provisions in all new subdivisions, commercial and in-

dustrial projects to store on-site runoff. The amount required to be stored for a minimum of 24 hours is the runoff from a 50-year, 24-hour storm.

STRUCTURAL MEASURES

The northern end of the RWCD Floodway starts about 230 feet north of Brown Road. From this point, the floodway flows south and follows the alignment of the present manmade floodway and parallels the RWCD Irrigation Canal for a distance of 18.23 miles. From this point, the remaining 9.13 miles of floodway will be realigned and will end east of Gila Butte at the Gila River. The location of this floodway can be seen on the Project Map in Appendix B.

The depth of the existing channel between Brown Road and Apache Boulevard averages about three feet and the bottom width about ten feet. The soils in this reach are very uniform sandy to very sandy clay with only minor occurrence of clayey sand. The fine textured fraction of these soils possess low to medium plasticity. The soil consistency is stiff to very stiff with the very stiff soils generally occurring below five feet in depth. Another important factor in channel stability is the presence of weak calcium carbonate cementation.

For the reach of channel between Apache Boulevard and Ray Road, a typical cross section of the present channel has a depth of about 9 feet and a bottom width of 60 feet. Soils encountered in the reach are primarily moderately plastic sandy clays which are generally calcareous and range from stiff to very stiff. Lenses of dense to very dense clayey sand and sandy, clayey silt are common within the clay. Indurated caliche and calcareous siltstone occur beneath these soils.

From Ray Road to Hunt Highway, the existing floodway has an average depth of ten feet and a bottom width of about 110 feet. Soils that are found in this reach are stratified deposits of silt, silty or clayey sands, and some gravel. Older alluvial fan deposits are somewhat consolidated and slightly to well cemented.

From the Hunt Highway to the Gila River, the floodway has a new alignment. Soils in this reach can be broken into two generalized reaches. The first reach is from Hunt Highway to Gilbert Road where alluvial fan deposits of variably cemented silty and clayey sands are present. Also, intermittent coarse sand and gravel deposits occur in the fan deposits and become dominant at higher elevations. The second reach is from Gilbert Road to the Gila River. Soils in this reach consist primarily of unconsolidated clay and silt with some sand and silty sand lenses. Interfingering and overlapping lenticular deposits of loose sand and unconsolidated or weakly consolidated clay and silt are present throughout the remainder of the portion that is underlain by the Gila River deposits.

The design of the floodway is predicated on: (1) projected land use to the year 2000; (2) future urban developments providing that the

volume of storm water be stored for the area between the system of floodwater retarding structures and the floodway to equal or exceed one inch; (3) constructing structures as proposed in the Buckhorn-Mesa Watershed; (4) constructing structures within the Lower Queen Creek Watershed and achieving 100-year level of control; and (5) enlarging the capacity of the floodway to convey floodwaters resulting from a storm occurring on the average of once every 100 years.

Until the proposed floodwater retarding structures in the Lower Queen Creek Watershed are constructed, the planned capacity of the floodway will be limited to controlling floods expected to recur on the average of once in 30 years downstream of the confluence of Queen Creek. The local Sponsors are encouraged to carry out local implementation of land use regulations or building ordinances as they deem appropriate.

This floodway is to be constructed primarily as a trapezoidal earthen channel and will have a maintenance road on each side of the floodway. During construction when pockets of soil are encountered that cannot withstand the design velocity, they will be overexcavated and replaced with compacted soils that can withstand the design velocity. The floodway will be seeded to native grass species. Areas seeded to native grass species will not be irrigated. Pertinent data and typical channel cross sections can be seen on the following pages.

The hazard from overtopping and breaching has been minimized by planning the water-surface profile for design flow to coincide closely with the natural ground level. This design concept will place the major part of the waterway area in the natural soil. This design concept will lower the water level from the existing floodway by four to six feet and allow the downslope embankment to provide an increased degree of control.

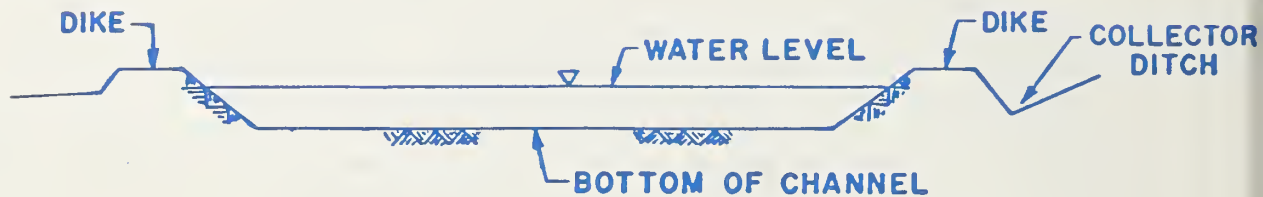
There are no planned stabilization measures in the reach from Brown Road to Apache Boulevard. From Apache Boulevard to Ray Road, there are six short reaches of floodway lined with rock. Rock lined sections are required for grade control and channel stability.

To provide channel stability at least cost, it was determined the floodway will be concrete lined from Ray Road to the vicinity of Williams Field Road. In the vicinity of Citrus Heights Road, a four-foot high concrete drop structure is planned to allow design flows to remain at or below natural ground level. A reach of concrete lined floodway is proposed to be constructed about a mile upstream of Gilbert Road. At the confluence of the floodway with the Gila River, an outlet structure will be installed.

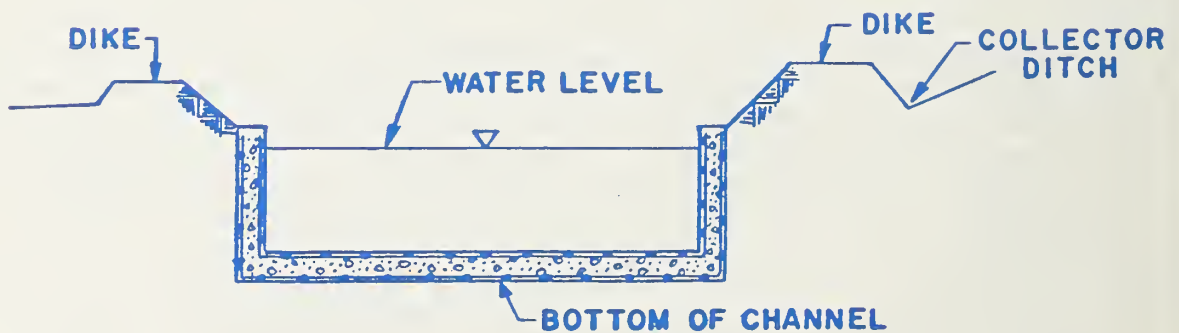
To allow runoff from urban and agricultural lands to enter the floodway, pipe inlets will be placed intermittently along the length of the channel and through the upslope dike which serves as a maintenance

TYPICAL CHANNEL CROSS SECTIONS

R.W.C.D. FLOODWAY



TYPICAL CROSS SECTION
TRAPEZOIDAL CHANNEL



TYPICAL CROSS SECTION
RECTANGULAR CHANNEL

Pertinent Data About The Roosevelt Water Conservation District Floodway

Loca- tion	Approximate Length Mi.	Floodway				Side Slopes	Type Lining	Velocity Ft./Sec.	Area Needed	
		Capacity CFS	Bottom Width Ft.	Water Depth Ft.					Floodway & Roads Ac.	Spoil Disposal Ac.
Brown Rd.	0.04	500	26	7.5		3:1	earth	1.9	1.0	
	1.10	1,200	80	7.5		3:1	earth	2.2	20.0	20
	0.61	2,000	110	7.5		3:1	earth	2.4	15.0	
Apache Blvd.	0.08	2,000	33	7.2		3:1	rock	4.1	1.5	
	0.51	2,300	90	7.4		3:1	earth	1.7	10.5	
	0.12	2,300	30	7.2		3:1	rock	4.4	2.5	
	0.16	2,300	90	7.6		3:1	earth	1.7	3.5	
	0.76	3,100	110	7.7		3:1	earth	1.9	17.5	
	0.02	3,500	110	7.8		3:1	earth	2.1	0.5	
	0.15	3,500	50	7.4		3:1	rock	4.3	4.0	
	0.15	3,500	110	7.7		3:1	earth	2.1	4.0	
	0.55	4,800	140	7.6		3:1	earth	2.4	13.0	150
	0.04	4,800	140	7.6		3:1	rock	2.9	1.0	
	1.46	4,900	140	8.1		3:1	earth	2.2	37.5	
	0.18	4,900	75	7.2		3:1	rock	4.5	5.0	
	0.38	4,900	140	7.7		3:1	earth	2.5	10.0	
	0.04	4,900	140	7.4		3:1	rock	3.0	1.0	
	1.00	5,100	150	8.4		3:1	earth	2.2	31.5	
	0.99	5,300	150	8.5		3:1	earth	2.4	29.0	
	0.61	5,900	170	8.5		3:1	earth	3.0	19.0	
	0.04	6,500	170	8.4		3:1	rock	3.6	1.0	
Ray Rd.	1.06	6,500	50	8.8		2:1	concrete	7.0	13.0	
	0.07	6,500	75	7.9		2½:1	rock	6.3	2.5	
	0.81	6,500	200	8.6		3:1	earth	1.9	29.0	
	0.78	6,900	200	8.1		3:1	earth	2.1	24.5	
	2.48	6,900	150	7.1		3:1	earth	3.4	83.0	
	1.64	6,900	250	8.3		3:1	earth	1.8	55.0	
	0.13	8,100	155	5.5		3:1	rock	8.4	5.0	
	2.56	8,100	250	8.2		3:1	earth	2.2	104.0	415
Hunt Hwy.	2.44	8,700	250	8.3		3:1	earth	2.2	78.0	
	0.01	8,700	158	8.5		3:1	rock	2.9	0.5	
	0.65	8,700	65	6.9		0:1	concrete	10.2	20.5	
	5.64	8,700	200	5.9		3:1	earth	3.9	185.5	
	0.01	8,700	183	6.0		3:1	rock	4.2	0.5	
	0.01	8,700	166	4.4		1½:1	concrete	7.4	0.5	
	0.08	8,700	200	5.9		3:1	earth	3.9	2.5	
Gila River										
Totals	27.36								832.0	585

road. A collector ditch will convey floodwaters to these pipe inlets. Lined sections of the upslope channel bank will be constructed to allow overland runoff to flow into the floodway. Entrance conditions of large washes into the floodway will be transitional, and where needed, junction structures will be provided. At points where sediment will enter the floodway, sediment traps will be constructed. These structures are planned to collect the annual bedload material before it gets into the main channel. Floodwaters will flow through these structures and on into the floodway. Sediment from large contributing areas will be either deposited in the floodway or a contributing drainageway. The floodway will be maintained to its designed capacity.

Between Brown Road and Apache Boulevard, an estimated 36 acres will be needed to construct the floodway and maintenance roads. Of this total, about 33 acres are at present being used for agricultural purposes. The existing floodway occupies the remaining area. In the reach of floodway between Apache Boulevard and Ray Road, about 192 acres will be needed for construction. Of this total, about 59 acres are being used for the existing floodway, 90 acres are being used for agricultural purposes, 23 acres have riparian vegetation, and 20 acres have desert vegetation. In the reach between Ray Road to the Gila River, there are an estimated 604 acres required for construction. Of this total, 142 acres are at present being used for the existing floodway, 181 acres are being used for agricultural purposes, 132 acres have desert vegetation, and 149 acres have riparian vegetation.

Where possible and feasible, excavated material from the floodway will be used for such purposes as: leveling irrigated fields, extending runways at the Williams Air Force Base, raising road fills, filling abandoned gravel pits, and by subdividers for shaping subdivisions and raising pads for housing. There have been indications made at public meetings and by individuals that a substantial portion of the excavated material will be used in these ways. Arrangements for use of the material on individual properties will be made immediately before construction of any segment of the floodway.

That portion of the excavated material that cannot be put to a useful purpose will be placed in designated disposal areas. The maximum depth of material placed will be 10 feet above ground. The disposal areas will be shaped for moisture retention. These areas will be seeded to native grass species at the end of each construction season. Areas seeded to native grass species will not be irrigated. Tree and shrub plantings will follow where necessary or desirable and will be irrigated for two growing seasons or less depending on the species' ability to become established.

The local Sponsors will obtain an easement for placement of the spoil in the designated disposal areas. In these cases, development of the land will be at the discretion of the landowner. Where the land is purchased by the Sponsors, the land may be made available for public or private use or may be sold at the option of the local Sponsors.

Land for the purpose of disposing of excavated material coming from the floodway is needed. The Soil Conservation Service has considered spoil disposal site requirements. Conceptually, the spoil disposal plan requires some 20 acres of agricultural land for this purpose in the reach between Brown Road to Apache Boulevard. From Apache Boulevard to Ray Road, there is a need for six disposal areas ranging in size from 8 to 44 acres and totaling about 150 acres. Of this total, 106 acres are presently used for agricultural purposes, 33 acres are in desert shrub, and 11 acres are in riparian vegetation. About 415 acres are needed for disposal areas in the reach from Ray Road to the Gila River. In this reach the six disposal areas that are needed range in size from 35 to 90 acres. Some 320 acres of the total in this reach are in desert shrub, and 95 acres are in riparian vegetation. The Soil Conservation Service and the Sponsors will jointly develop a spoil disposal plan for the project as required for each reach of construction.

All road crossings will be landscaped on the upslope side of the floodway in the reach from Brown Road to Hunt Highway. In this reach there is not sufficient area available to landscape the downslope side because the RWCD Irrigation Canal is adjacent to the floodway. In the reach from Hunt Highway to the Gila River, where it is found desirable, road crossings will be landscaped on both sides of the floodway. Approximately 100 feet on each side of the road will be landscaped. The area will be seeded to native grass species and planted to native trees and shrubs. Trees and shrubs will be irrigated for two growing seasons or less depending on the species' ability to become established.

The construction of this 27.36 mile floodway will require the purchase of or the easement on about 832 acres of land along with the relocation of a railroad bridge, 2,400 feet of railroad tracks, 1,500 feet of water pipelines, 14,000 feet of telephone lines, 15,400 feet of electric lines, 2,600 feet of gas pipelines, 3,400 feet of irrigation pipeline, 600 feet of telephone cable, 4 owner-occupied dwellings, 3 businesses, 2 tailwater recovery ponds, and 1.7 miles of irrigation lateral. The Sponsor will replace only highway bridges and roads that are in existence. There are 14 existing dedicated county road bridges, 2 dedicated county roads, 1 existing dedicated state highway bridge to be replaced, and 2 dedicated state highways bridged. One new railroad bridge will be constructed.

Land subsidence and earth fissures have created no problems relative to the function and operation of the existing floodway and water distribution systems. No problems are foreseen for the proposed floodway; however, earth fissures may occur in the future. Surveying monuments will be installed during construction. These monuments together with existing monuments will be checked periodically by the Soil Conservation Service and the Sponsors to determine changes in elevations. Also, periodic field checks will be made during the effective economic life of the floodway to determine the extent of development of earth fissures in the area.

Soil Conservation Service policy requires that care be exercised during construction to preserve and protect the natural landscape and to minimize soil erosion, water, air, and noise pollution. All construction work will be done in conformance with this policy. Plans may include watering haul roads and earth fills to suppress dust, reducing erosion by mulching of exposed areas, and burying unsalvageable material. State and federal laws and regulations will be observed in minimizing air and noise pollution.

Public use will be controlled by the Flood Control District of Maricopa County. If future use is of such a magnitude as to damage the structure or create health and safety problems, the district will limit public access.

Many prehistoric and historic sites have been identified in the project area. Most of which are on the Gila River Indian Reservation. The Soil Conservation Service has worked with the Sponsors, the Gila River Indian Community and professional archeologists to determine the proposed alignment of the floodway on the Reservation. The alignment as proposed causes the least possible affect on the cultural resources present. However, some cultural resources will be affected and a cultural resource management plan to minimize those impacts will be developed in consultation with the Interagency Archeological Services and the State Historic Preservation Officer and reviewed by the Advisory Council on Historic Preservation. The procedures used to effect protection of archeological resources are set forth in Title 7 CFR Part 656. 3/

WILDLIFE HABITAT MEASURES

An interagency team of biologists inventoried the wildlife habitat. Using guidelines found in the U.S. Fish and Wildlife Service "Ecological Planning and Evaluation Procedure," they determined values, called "habitat units," of the various vegetative types by land uses.

The evaluation showed that the acreage and habitat units of desert shrub and cropland will increase with the construction of the project. The desert shrub vegetative type is composed of forbs, grasses, shrubs, and some cacti. Desert riparian acreage and habitat units will decrease significantly by adding the project. Desert riparian vegetative type includes trees and shrubs together with other vegetation. Plans, therefore, are proposed to mitigate and compensate for wildlife habitat losses on desert riparian vegetation only.

The impact of the project was determined by listing future habitat units with and without the project condition and by calculating the difference. Subsequent inventories showed that about 410 acres of desert riparian vegetation valued at about 1,650 annual habitat units will be lost. About one-half of the habitat units are in the area known as the "triangle" bounded by the floodway and Highways 87 and 93. The triangle is on the Gila River Indian Reservation, partly outside the boundaries of the project. The remaining habitat losses are on lands to be used for the floodway and spoil disposal.

From the "triangle" to St. Johns Mission there are trees and shrubs along the natural Queen Creek drainage. This drainage receives flood flows from the project area together with irrigation tailwater and storm water runoff from other areas. Small, frequent flood flows flowing from the project area dissipate rapidly after leaving the "triangle". The impact on vegetation resulting from diverting flood flows, from the area west of Highway 93, is judged to be minor and no mitigation is included for this area in this plan.

Partial mitigation can be accomplished in the project area by planting 75 acres of desert riparian vegetation such as paloverde and ironwood trees and seeding to native grass species upslope of the collector ditch and within the floodway right-of-way. Trees and shrubs will be irrigated for two growing seasons or less depending on the species' ability to become established. These plantings would be equivalent to about 400 annual habitat units.

The Soil Conservation Service and the Arizona Game and Fish Department evaluated several hundred acres of wildlife habitat along the Gila River, about 40 miles downstream of the floodway outlet. These lands are near the Robbin Butte State Wildlife Management Unit and the Bureau of Land Management Fred J. Weiler Greenbelt. A 280-acre parcel, equivalent to about 1,300 annual habitat units, was evaluated and will satisfy the remaining need. In the event that this specific parcel cannot be purchased, alternate sites will be evaluated and purchased. An appropriate parcel will be purchased and fenced to preserve wildlife values. This plan will be implemented by the Flood Control District of Maricopa County.

Offsite mitigation requiring the purchase of 280 acres of land will be concluded prior to the construction of the floodway upstream of Gilbert Road.

OPERATION AND MAINTENANCE

The Flood Control District of Maricopa County will be responsible for operation and maintenance of the RWCD Floodway. The District will obtain all necessary funds for operation, maintenance, and replacement from taxes or assessments levied by the Sponsors.

An operation and maintenance agreement will be entered into between the sponsoring local organizations and the Soil Conservation Service prior to the signing of a project agreement. An operation and maintenance plan will be prepared for the floodway. All phases of operation and maintenance of the floodway will comply with applicable local, state, and federal regulations.

The Sponsors' responsibility for operation and maintenance begins when a part of or all of the work of installing the floodway, related appurtenances, and vegetative work are completed and accepted or are determined complete by the Soil Conservation Service. This responsibility shall continue until the expiration of the evaluated life of all the installed project measures. This does not relieve the Sponsors' liability which continues throughout the life of the measure or until the measure is modified to remove potential loss of life or property.

It is planned that the landscaped areas adjacent to road crossing and trees and shrubs will be irrigated for two growing seasons or less depending on the species' ability to become established. Areas seeded to native grass species will not be irrigated.

The responsible Sponsors' representative will inspect the floodway at least annually and after each major storm or occurrence of any unusual condition that might adversely affect the floodway. The Soil Conservation Service will make inspections to determine whether or not project measures are operating properly, and that all operation and maintenance is performed in a timely manner and in compliance with the operation and maintenance agreement. A written report will be made of each inspection. A copy of each report will be provided by the inspecting party to the other party within ten days of the date on which the inspection was made. The report will describe the conditions found and list any corrective action needed with a time frame to complete each action.

Representatives of the federal, state, and county governments will have access at all times to the floodway for official activities.

Periodic removal of sediment and debris will be necessary for the proper functioning of the floodway. Sediment will be spread within the right-of-way of the channel or in spoil disposal areas where it will be seeded to native grass species. Debris will be removed to offsite locations and disposed. Pipe inlets will be maintained and replaced as necessary.

Surveying monuments installed during construction together with existing monuments will be checked periodically by the Soil Conservation Service and the Sponsors to determine changes in elevations in the vicinity of the floodway.

Further guidelines regarding operation and maintenance procedures are given in the Arizona Watershed Operation and Maintenance Handbook. Sponsors of the project have copies of the handbook on file.

From experience, the Sponsors have determined that vandalism occurs frequently and is prevalent on most existing flood control structures. Plant life, fences, irrigation systems, and concrete and rock structures are often severely damaged. This may occur throughout the life of the structure and is, therefore, a very costly and time consuming problem for the Sponsor. The design and construction of the floodway will take into consideration features to minimize vandalism.

The Soil Conservation Service will work with the Sponsors to ensure that the design of the floodway considers the most efficient and economical maintenance practices.

If the Sponsor, the Secretary of the Interior and the Arizona Game and Fish Department find that it would be in the public interest for the offsite mitigation area to be managed for fish and wildlife purposes, the Arizona Game and Fish Department will be asked to assume operation and maintenance responsibilities. Under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), the Secretary of the Interior, the Soil Conservation Service, the Arizona Game and Fish Department, and the Flood Control District of Maricopa County will develop and agree on a general agreement for use of the area for wildlife conservation and management. Operation will include periodic checks to assure that the area is not being grazed by domestic livestock and that woodcutting is controlled.

PROJECT COSTS

The project installation cost includes all P.L. 566 and other costs, including the cost of work required to comply with mandatory state laws or regulations, in cash or its equivalent, for installing the structural works of improvement and the cost of archeological work. The work plan supplements for the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds provide an individual watershed breakdown of costs. The RWCD Floodway total installation cost is estimated to be \$29,841,300, which includes P.L. 566 funds of \$23,620,800 and other funds of \$6,220,500. Project construction cost for the floodway is estimated to be \$17,704,300. This cost will be borne from P.L. 566 funds.

ENVIRONMENTAL SETTING

PHYSICAL RESOURCES

The project area is located in eastern Maricopa and northwestern Pinal Counties, which is in south-central Arizona and totals 302,265 acres (472.3 square miles). The project area is the three authorized P.L. 566 Projects (Buckhorn-Mesa, 69,172 acres; Apache Junction-Gilbert, 89,983 acres; and Williams-Chandler, 143,110 acres). Several cities and communities are located within or in proximity to the project area. These include Phoenix, Tempe, Mesa, Gilbert, and Chandler. The unincorporated community of Apache Junction, 10 miles east of the floodway is within the project boundaries. The 1975 populations of these cities and communities are: Phoenix, 669,005; Tempe, 93,822; Mesa, 100,763; Chandler, 20,034; Apache Junction, 6,000; and Gilbert 3,603. ^{4/} Development is predominantly urban in the northern half with agriculture concentrated in the southern half. The population is 85 percent urban and 15 percent rural.

The project area is located in the Lower Colorado Region, as designated by the Water Resources Council. The Lower Colorado Region includes most of Arizona, and parts of Nevada, Utah, and New Mexico. The population of the Region is concentrated principally in south central Arizona and southern Nevada. The remainder of the Region's population is located in small, widely scattered communities.

The Region is divided into three subregions; the project area is in the Gila Subregion. Terrain of the subregion varies from the open expanses of the desert to high, rugged mountains. Most developments and population occur in the desert valleys in the vicinity of the floodway. The long growing season, good soils and water, and mild winters combine to make the irrigated croplands among the Nation's most productive. The mild winters attract many tourists.

The upper watersheds drain onto a wide alluvial fan on which valuable improvements, including residential and commercial, have been established. Floodwater retarding structures installed or to be installed protect about 92,900 acres between the dams and floodway.

Below the RWCD Floodway and within the project area, approximately 86,200 acres are flood-prone. Only 18,220 acres would be inundated by the 100-year flood. The specific area flooded varies depending on where breaks in the RWCD Floodway occur and on the amount and direction of flow. The present land use in the flood-prone area and in a characteristic 100-year flood plain is shown on the following page.

Area Affected By Flooding - Acres

<u>Land Use</u>	<u>Flood-Prone Area</u>		<u>100-Year Flood Plain</u>	
	<u>Present Condition</u>	<u>Year 2000</u>	<u>Present Condition</u>	<u>Year 2000</u>
Cropland	67,580	40,000	14,290	8,460
Rangeland	2,760	2,760	580	580
Urban Lands	15,860	43,440	3,350	9,180
Total	86,200	86,200	18,220	18,220

The flood-prone area is undergoing a tremendous rate of population and development growth. For instance, the 1970 population of Mesa was 62,850; by 1975 the population had increased to 100,763. This trend is expected to continue.

Soils found in the irrigated farmland area are considered pre-dominately prime or of local importance and are shown in detail in Soil Survey of Eastern Maricopa and Northern Pinal Counties Area, Arizona. The general soil maps of Maricopa and Pinal Counties encompass the entire project area and show soils in terms of associations. The following soil associations are the most common.

The Gilman-Estrella-Avondale association consists of deep loam and clay loam soils on nearly level, broad, featureless valley plains and flood plains. Slopes are usually less than one percent. These soils formed in recent alluvium derived from a variety of rocks.

The Antho-Valencia association consists of deep sandy loam soils on nearly level to gently sloping alluvial fans and valley plains. Slopes are less than one percent on the valley plain but range to as much as five percent. These soils formed in recent alluvium were derived from a wide variety of rocks but are dominantly granitic. Antho soils are on the alluvial fans while Valencia soils are on the lower lying valley plains.

The Carrizo-Brios-Vint association consists of deep sandy and gravelly soils which are in or adjacent to the major streams of the area. The soils formed in recent alluvial material derived from a wide variety of rock including acid and basic igneous and metamorphic rocks. Slopes are less than one percent, but many short side slopes are over three percent.

The Rillito-Gunsight-Pinal association is composed of some deep gravelly and very gravelly loamy soils and some soils which are shallow to an indurated hardpan. They occur on nearly level to gently sloping old alluvial and valley plains. Slopes are less than one percent but range to as much as 15 percent. The surface is undulating because of

the many stream channels which are entrenched from one to 20 feet. Parent materials are derived from mixed origins but are dominantly granite-gneiss, schist, basalt, andesite, and limestone. The Pinal soils usually occur on the upper end of alluvial fans nearest the mountains. Rillito soils are on the lower end of the alluvial fans. Gunsight soils are in a position between these two.

The Laveen-Coolidge association is composed of nearly level, limy loam and limy sandy loam soils on old alluvial fans and valley plains. Slopes are generally less than one percent. These soils formed in alluvium derived from a wide source of parent materials. Coolidge soils are on the alluvial fans, while Laveen soils are generally on the valley plains.

The Ebon-Pinamt-Tremant association consists of deep, gravelly loam to very cobbly loam soils on gently sloping to moderately sloping old alluvial fans. The surface is undulating because of the many stream channels which are entrenched from one to 20 feet. Slopes are one to nine percent. The soils formed in alluvium derived from a variety of sources which are dominated by granitic rock. Ebon soils are on the more steeply sloping upper ends of alluvial fans which are nearest the mountains. Pinamt soils are midway down the slopes of the alluvial fans, and Tremant soils are on the lower ends of alluvial fans at the lowest elevations.

The Casa Grande-Harquua association consists of deep sandy clay loam and very gravelly clay loam soils which contain excessive amounts of salt and alkali. These soils are on nearly level old valley plains, which are adjacent to some of the major stream channels of the area and the lower slopes of alluvial fans. Numerous small stream channels run through the area in a dendritic pattern but are seldom entrenched more than a few feet. The soils formed in alluvium derived from a wide variety of rocks. Slopes of the Casa Grande soils are seldom over one percent. The Casa Grande soils are on valley plains which parallel some of the major stream channels of the project area. Harqua soils are on the lower ends of alluvial fans which are slightly above the valley plains.

The Mohall-Contine association consists of deep loam and clay loam soils on nearly level old valley plains and alluvial fans. Slopes are less than one percent. This association is confined mainly to the area near Chandler. The soils formed in alluvium derived from a wide variety of acid and basic igneous rocks.

The Cherioni-Gachado-Rock outcrop association is composed of shallow and very shallow gravelly and cobbly soils and exposures of bedrock. Cherioni soils are on the lower slopes of most of the basalt, andesite,

and rhyolite mountains and many of the granite-gneiss mountains. Gachado soils occur primarily on the lower slopes of granite-gneiss mountains. Rock outcrop occurs on most of the crest of low hills.

The Cellar-Lehmans-Rock outcrop association consists of rock outcrops and shallow to very shallow, very gravelly, or cobbly soils that are formed in place on gently sloping to very steep granite, granite-gneiss, basalt, schist, rhyolite, andesite, dacite, and tuff mountains and low hills. The slopes range from five to eighty percent. Rock outcrop consists of exposures of bedrock. Cellar soils are on the lower slopes of granite, gneiss, and schist mountains while Lehmans soils are on the lower slopes of andesite, basalt, and tuff mountains.

The Class I soils are primarily on the flatter portions of the valley. The land capability classes for irrigated soils are I, II, III or IV. The land capability classes for non-irrigated soils are VII or VIII.

The project area is part of the Sonoran Desert Section of the Basin and Range Province. The mountains are composed of igneous and metamorphic rocks, the most common being Tertiary dacite and Pre-Cambrian granite. Other rocks present in smaller outcrops are Pre-Cambrian schist and quartzite, Tertiary andesite, Tertiary-Cretaceous conglomerate, sandstone, and shale.

Gentle alluvial slopes extend basinward from the mountains. The upper slopes in some places are underlain at shallow depths by rock. Valley fill consists of thick deposits of sand, silt, gravel, clay, and caliche.

Elevations range from 1,200 feet at the Salt and Gila Rivers to 5,100 feet in the Superstition Mountains. The general slope of the land is to the south and southwest.

The climate varies from arid in the valley and valley slopes to semi-arid in the mountains. In the arid section the average monthly precipitation exceeds one inch only in August and December. Winter precipitation is much less dependable than that of summer. Winter rains are generally associated with middle latitude storms that move eastward from the Pacific Ocean. Cloudy skies and intermittent showers are prevalent for several days. Snow is a rarity.

Summer rains are generally associated with thunderstorms. Rainfall rarely lasts longer than 30 minutes. Gusty winds and blowing dust usually precede the rain. This "monsoon" season generally starts in early July and ends in early September. Unusually heavy and prolonged summer precipitation may fall as a result of tropical storms moving northward from the Pacific Ocean. These storms often produce widespread disastrous flooding.

The summers are hot. From early June until late September the average daily temperature is about 80 degrees, with afternoon highs frequently exceeding 100 degrees. During the early part of this period, the air is extremely dry. The evening temperature may fall into the low sixties. During the "monsoon" season, the humidity may become relatively high; and the temperature may not fall below the high eighties.

From late fall until early spring, the climate is mild. During the winter months, the temperature ranges from the high thirties or low forties near daybreak to the high sixties in the afternoon. Afternoon highs sometime exceed 80 degrees. Freezing temperatures are uncommon, occurring on about 15 mornings during an average winter. Readings below 20 degrees are rare.

Average annual rainfall varies from 8 to 10 inches and the frost-free period is from 240 to 300 days in the foothill and valley areas; in the mountains the variation is from 10 to 16 inches and the frost-free period is from 200 to 300 days.

Winds are quite light, being gusty during the summer thunderstorms. Sunshine averages about 86 percent of the total possible days ranging from a minimum monthly average of 77 percent in December and January to a maximum of 94 percent in June. Lake evaporation averages about 70 inches per year.

The most significant potential mineral resources in the project area are (in order of importance); sand and gravel, gold, and building or decorative stone. The present and past courses of the Salt River and Gila River contain large deposits of sand and gravel. The northeast end of the area has produced important quantities of gold from mines in the Goldfield and Superstition Mining Districts. Most, if not all, of the past prospecting and mining efforts have been directed toward gold and related silver.

The majority of the gold produced has come from two mines, the Bull Dog and the Goldfield, also known as the Young or Mammoth. There are presently no mines operating in the Goldfield-Superstition Districts; however, a number of the old mine reports indicate the possibility of the existence of medium size low grade gold-silver deposits.

Modern trends in landscaping are making extensive use of nearly all types of rock for decorative purposes; and rock of any form, texture, and color is used. Volcanic rocks, attractively weathered, outcrop above the alluvial fill in many places within the project area, but it is doubtful the occurrences within the project area are of any special quality.

The project area contains 302,265 acres or 472 square miles. Of this total, 80,775 acres (27 percent) are irrigated cropland, 44,565 acres (15 percent) are urban or commercial development, and 176,925 acres (58 percent) are rangeland. (See General Land Ownership and Irrigated Croplands Map - Appendix D). Most of the development has taken place in the flood-prone areas. The following table gives a more complete breakdown of land use by watersheds within the project area.

Roosevelt Water Conservation District Floodway
Area by Land Use and Watershed - Acres

<u>Land Use</u>	<u>Buckhorn- Mesa</u>	<u>Apache Junction- Gilbert</u>	<u>Williams- Chandler</u>	<u>Project Area</u>
Cropland	10,905	29,760	40,110	80,775
Urban and Commercial	18,095	16,980	9,490	44,565
Rangeland	<u>40,172</u>	<u>43,243</u>	<u>93,510</u>	<u>176,925</u>
Total	69,172	89,983	143,110	302,265

Irrigation water is brought to the cultivated lands from reservoirs located on the Salt and Verde Rivers. The system of dams almost completely control flows in the river above the Granite Reef Dam. The system has a total impoundment capacity of 2,000,000 acre-feet of water. The Granite Reef Dam is located in the northern portion of the project area. Water is diverted into the Southern Canal and then into three canals; the Roosevelt Water Conservation District Canal, the Eastern Canal, and the Consolidated Canal East Branch. These irrigation canals traverse the project area in a north-south direction. The Salt River is perennial above the Granite Reef Dam having an estimated average daily flow of 1,300 cubic feet per second. Flows below the dam are dependent on releases through the dam or runoff from drainages below.

Runoff water from precipitation within the project area supplies some of the water needed for irrigation, but this source is undependable and comes during short duration storms. The U. S. Geological Survey (USGS) gaging station, located in Section 21, township 1 north, range 8 east, gives an indication of the flow frequency for the past eight years of record. The days of measurable flows range from 0 to 8 days with the average annual flow being 3 days. The average annual runoff volume is 0.50 inch for a square mile area.

Except for the Salt River upstream of the Granite Reef Dam, the Gila River and all washes in the project area are ephemeral--streams that flow only during periods of surface runoff and are otherwise dry. Washes in the mountains are unmodified, well-defined and have steep grades. With the high runoff rates, a large volume of water is concentrated in the washes and develops sufficient energy to carry large amounts of sediment. As the water reaches the flatter slopes at the base of the mountains, the velocity of the water decreases rapidly; and the sediment is quickly deposited. The channels become shallower and less defined. Overbank flow occurs, and the water spreads onto the alluvial fan.

Channel characteristics are based on four sample areas both in the upper and the lower alluvial fans. The length of channels three feet wide or wider varies per square mile from 30 miles on the upper fan, to six miles on the intermediate fan, and four miles on the lower fan. Approximately ten percent of the channels on the upper fan are greater than 15 feet in width. There are no channels this wide on the intermediate or lower fan.

Floodwater retarding structures and floodways in the area between the Salt River and Queen Creek intercept the overbank flow. In the Buckhorn-Mesa Watershed all flows, except those flowing down Weekes Wash, will be diverted into the Salt River upstream of the Granite Reef Dam. For the remaining area, existing floodwater retarding structures intercept flood flows and channel them by way of the Powerline Floodway to the RWCD Floodway. The RWCD Floodway carries these flows together with floodwaters from the intervening areas south onto the Gila River Indian Reservation. This water would not normally flow onto the reservation at this location. The existing floodway terminates just upstream of the Southern Pacific Railroad and State Highway 87. Floodwaters then flow in a northwesterly direction through several railroad and highway bridges onto an undeveloped desert area, then overland in a westerly direction to the Gila River near St. Johns Mission. Flows tend to spread over the desert and soak into the ground with only the larger flood flows reaching the Gila River.

The drainage area of the Gila River near Laveen is 20,615 square miles. About 696 square miles of this drainage area is in Mexico, the rest constitutes roughly the southern half of Arizona and the southwestern part of New Mexico. 5/ The Gila River drainage above the RWCD Floodway outlet, near Gila Butte, is about 20,000 square miles. The project area represents 2.4 percent of the Gila River drainage area at the Gila Butte location.

Since November 1928, flows from the area above Coolidge Dam (12,886 square miles) have been effectively controlled, enabling the San Carlos Project to utilize most of the yield from the upper Gila River for

irrigation purposes. The low flows entering the river below the dam are utilized, but the larger flood flows cannot be utilized because of lack of storage. The drainage area of the Gila River below the Coolidge Dam down to the confluence of the RWCD Floodway is 7,114 square miles. Buttes Dam, to be constructed on the Gila River as part of the authorized Central Arizona Project, will control an additional 5,300 square miles. This dam is to be located 48.8 miles upstream from the Gila River and the RWCD Floodway confluence. The area which will be uncontrolled on the Gila River below Buttes Dam to the RWCD Floodway confluence is 1,814 square miles.

The Ashurst-Hayden Diversion Dam is located about four miles downstream of the proposed Buttes Dam and is used to divert river water for irrigation purposes. Most of the time the entire river flow is diverted. Flood flows that exceed the diversion capacity spill over the dam and proceed down the river past the floodway outlet. During the year an average of seven runoff periods occur in the river reach from Ashurst-Hayden Diversion Dam to the Santa Cruz River confluence. The average duration of flow from these events is only about 70 days during the year or about 18 percent of the time. Because of the infrequent flows in this reach of the Gila River, there have been no water quality measurements made in the vicinity of the floodway outlet.

The primary use of the Gila River is to convey floodwater and irrigation tailwater downstream. Analysis of river channel losses in the Gila River indicates high recharge potential. The channel banks are lined with riparian vegetation consisting principally of mesquite, salt cedar, desert broom, seepwillow, quailbush, and grasses.

Most of the RWCD Floodway is within the Salt River Valley ground water basin. A small portion of the floodway, including its outlet, is located within the Lower Santa Cruz ground water basin. The boundary between the two basins is considered to be arbitrary since a hydraulic connection exists along the Gila River from the Santan Mountains to the Sierra Estrella Mountains. 6/ Large quantities of ground water are present in the Basin and Range Province. It is estimated that about 153.6 million acre-feet of water is stored as ground water within the Salt River Valley Basin within a depth of 1,200 feet. About 91.1 million acre-feet of ground water is stored in the Lower Santa Cruz Basin within a depth of 1,200 feet. The accumulation of this ground water reservoir occurred over a period of many thousands of years. At present, the depth to the water table within the project area ranges from about 57 to 360 feet.

All of the area to be affected by the proposed project is within a designated critical ground water area. As defined by state law, a critical ground water area "...is any ground water basin or designated subdivision thereof not having sufficient ground water to provide a reasonably safe supply for irrigation of the cultivated lands in the basin at the current rates of withdrawal." 7/

The annual pumpage of ground water is greatly in excess of replenishment by ground water recharge. The average depth to the water table has been declining since 1930. In some areas the decline has been as much as 160 feet since 1930.

Precipitation generally evaporates, runs off, or is used by plants. Only about one percent of the total precipitation is estimated to recharge the ground water basins.

Runoff from storms, above the RWCD Floodway, is presently conveyed onto the Gila River Indian Reservation. This amounts to about 6,700 acre-feet on an average annual basis. This runoff is estimated to contribute 2,000 acre-feet to the ground water basins.

Data collected in 1966 and 1967 shows ground water quality is quite variable within the area. Ground water from most of the area will not meet the minimum recommended standards set by the United States Public Health Service (USPHS) for drinking water. This is due primarily to concentrations of total dissolved solids or hardness. One small area, about five square miles, northeast of Buckhorn has water which has a flouride content in excess of the maximum recommended limit established by the USPHS. There are two areas with ground water of acceptable quality for drinking water in accordance with USPHS standards. One of these areas covers approximately 50 square miles and extends from a point about five miles west of Apache Junction to the Lower Queen Creek Watershed boundary southeast of Florence Junction. The other area with water of acceptable quality extends from about one mile west of Chandler Heights east-southeast for a distance of about 9 miles. This area covers approximately 15 square miles. 8/

Localized concentrations of sodium, chloride, iron, manganese, chromium, lead, and cadmium ions may place some limitation upon useage of ground water. In most of the area the ground water has a medium to high salinity hazard and sodium (alkali) hazard for irrigation useage. Locally high temperatures of ground water also create some hazard for irrigation usage, but with proper management measures the ground water of the area is satisfactory for irrigation purposes. 8/

Wetlands found in the project area consist of three types as designated by the U.S. Fish and Wildlife Service Circular 39, Wetlands of the United States. Type 3 wetland, inland shallow fresh marsh, occurs along the Salt River upstream from Granite Reef Dam. This area of approximately two acres has cattail and bulrush vegetation growing in shallow fresh water along the edge of the river. In the project area there are seasonally flooded basins or flats. However, these areas do not contribute to wetland habitat because of the short duration that floodwater is ponded. There are an estimated 60 small irrigation tail-water ponds totaling approximately 60 acres which are termed inland open fresh water and classified as Type 5 Wetland.

PRESENT AND PROJECTED POPULATION

The state of Arizona, and central Arizona in particular, is attracting migration from throughout the nation. Arizona's growth rate is more than three times that of the United States. The high population growth rate is due to the increased mobility of the American public and the mild winter climate which brings out-of-state visitors. Many of these winter visitors return permanently for retirement or employment. Aeronautic, space, and electronic related industries have located in the area providing increased job opportunities. Based on projections by the Maricopa Association of Governments and the Pinal County Planning and Zoning Department, the population of the project area will increase from 130,000 in 1975 to 330,000 in 2000.

At present the percentage of low-income residents is below the state average. An estimated 9,200 persons have incomes less than the poverty level.

The census data for Mesa is representative for the project area. Based on the 1972 census, it is found that the minority population is composed of 7992 persons of Spanish-surname (12.7 percent), 789 Negro (1.3 percent), and 467 other (0.7 percent) for a total of 14.7 percent.

ECONOMIC RESOURCES

Land ownership is shown on the General Land Ownership and Irrigated Croplands Map (Appendix D). The project area contains 302,265 acres of which 182,887 acres (60 percent) are in private ownership; 8,660 acres (3 percent) are in Indian trust; 77,494 acres (26 percent) are administered by the State Land Department; 3,668 acres (1 percent) are administered by the Bureau of Land Management; 23,456 acres (8 percent) are administered by the Forest Service; and 6,100 acres (2 percent) are administered by county and municipal entities.

The agricultural economy of the project area is well established and highly developed. Due to climatic conditions, all cropland is irrigated with water obtained from the Salt River Project, Roosevelt Water Conservation District, and private wells. Of the 80,775 acres of irrigated cropland in the project area, an estimated 90 percent could be considered prime farmland. The remaining cropland would not be considered prime farmland but rather of local importance. There are an estimated 450 family-sized farms in the project area with the average farm totaling 210 acres. The farms vary in average size from 83 acres in the Buckhorn-Mesa Watershed to 285 acres in the Williams-Chandler Watershed.

Cotton, alfalfa, and small grains comprise approximately 77 percent of the total crops grown.

Average Acreage and Yield
of
Farm Crops in the Project Area

<u>Crop</u>	<u>Acres</u>	<u>Yield</u>
Cotton	21,165	1,160 lbs.
Alfalfa	20,870	6 tons
Small Grains & Miscellaneous	21,380	1.5 tons
Vegetables	640	220 cwt.
Citrus	8,820	400 cartons
Sugar Beets	3,525	18 tons
Grain Sorghum	<u>4,375</u>	1.6 tons
Total	80,775	

Cropland ranges in value from \$1,500 to \$3,000 per acre. Some croplands are valued at \$6,000 per acre. Urban and commercial land values on the average range from \$4,000 to \$6,000 per acre.

Transportation facilities are available and provide easy access of farms and ranches to markets. U.S. Highways 60-80-89 traverse the area, and the completion of the Superstition Freeway within the Apache Junction-Gilbert Watershed will improve the market accessibility. The Southern Pacific Railroad, serving agriculture and nonagriculture markets, is within the project area.

In addition to the agricultural production, there are various complementary agricultural services and operations. There are several cotton gin companies providing ginning services and several livestock feedlots and dairies which supplement the hay production segment of the agricultural economy.

Although agricultural production and related services are an important part of the economy, the nonagricultural segment is increasing at a rapid rate. In portions of the project area, there are increasing retirement and recreational developments. The trend toward urbanization has created economic problems for some farmers. Farmlands are being taxed at market values including values as potential urban land. These high tax rates reduce net income to farmers which make farm operations less profitable.

The present high unemployment does not represent normal economic conditions. The unemployment rate was approximately four percent for the project area in the 1970 census. The median family income is currently about \$9,600 per family. Approximately seven percent of the families have incomes less than poverty level. Minority families generally have a lower median income and represent 14.7 percent of the total population in the area.

The project area and Maricopa County are similar in economic and social conditions. The growth outlook is optimistic with practical planning and improved development techniques expected to complement growth. Although land-use planners are aware of the desirability of preserving quality agricultural lands, the problems of land ownership, high land values, and taxing and zoning problems will need to be recognized and resolved in order to preserve prime irrigated cropland.

The continuing influx of newcomers into the project area has been instrumental in the growth of the construction industry. Approximately nine percent of the employment is in the construction industry, and twenty-two percent is in the manufacturing industry. In comparison, the agricultural industry employs approximately two percent of the work force.

The Hohokam Resource Conservation and Development Project has been authorized for operation and includes all of Maricopa County and the Gila River Indian Reservation in Pinal County. The RWCD Floodway is one of the associated measures included in the Hohokam Resource Conservation and Development Project Program of Action.

Pinal County was designated a Redevelopment Area by the Economic Development Administration under Title IV of the Public Works and Economic Development Act of 1965. The Four Corners Economic Development Region includes Arizona, Colorado, New Mexico, and Utah.

PLANT AND ANIMAL RESOURCES

Native vegetation found in the project area is typical of that seen in the upper Sonoran Desert. In the mountain and valley slope zones, vegetation is primarily shrubs with a light overstory of trees. There is a fair growth of annual grass but perennial grasses are generally lacking. Vegetation includes the giant saguaro and other cacti, palo-verde, desert ironwood, crucifixion-thorn, and shrubs of the legume and sunflower families. Annual grasses and forbs include the gramas, filaree, and Indian wheat. In the higher mountain areas minimum winter temperatures limit the distribution of frost sensitive plants. Vegetation on rock slopes is dominated by shrubby members of the lily and amaryllis families such as yuccas, agaves, bear grass, and sotol. Leguminous shrubs include the acacias and mimosas.

The vegetation in the uncultivated areas along the floodway is characterized by widely-spaced woody and succulent plants that are well adapted to conserving stored water during periods of drought. These desert plants are spaced so that a closed covering is not developed, large size is not usually attained, and vegetative activity is not maintained throughout the year.

As the floodway progresses farther to the south, the topography flattens slightly and the vegetation changes to a creosotebush community with scattered cholla and pricklypear cactus. The desert is cut by numerous washes lined with palo verde, ironwood, mesquite, and saguaro.

Toward the outlet end of the floodway, the vegetation changes to a desert saltbush community with scattered hedgehog and saguaro in the higher areas and saltbush, mesquite, and wolfberry bushes in the lower areas. At the outlet, the Gila River is lined with desert riparian vegetation consisting principally of mesquite, saltcedar, desertbroom, seepwillow, quailbush, and grasses.

Any plants that appear in the Arizona Protected Plants Law and are found during construction may be salvaged, removed, and preserved in accordance with state law.

The periodic floodwater plus irrigation tailwater that flows across the undeveloped desert area on the Gila River Indian Reservation have stimulated the growth of native vegetation in the area flooded. The extent of this effect diminishes with distance due to channel loss. The area which shows the greatest effect is immediately west and north of the existing floodway terminus. This area is bounded on the east and north by Highway 87, on the west by Highway 93, and on the south by the proposed floodway. This area is referred to as the "triangle."

From the "triangle" to St. Johns Mission, there are trees and shrubs along the natural Queen Creek drainage. This drainage receives flood flows from the project area together with irrigation tailwater and storm water runoff from other areas. Small, frequent flood flows flowing from the project area dissipate rapidly after leaving the "triangle".

The Most Common Plants Indigenous To The Project Area 9/

<u>Common Name</u>	<u>Scientific Name</u>
Catclaw acacia	Acacia Greggii
Ragweed	Ambrosia spp.
Fiddleneck	Amsinckia spp.
Milkweed	Asclepias spp.
Locoweed	Astragalus nuttallianus
Quailbush	Atriplex lentiformis
Desert Saltbush	Atriplex pycarpa
Seepwillow	Baccharis glutinosa
Broom baccharis	Baccharis sarothroides
Desert bailey	Bailey
Spiny hackberry	Celtis pallida
Blue paloverde	Cercidium floridum
Littleleaf paloverde	Cercidium microphyllum
Saguaro	Cereus giganteus
Desertwillow	Chilopsis linearis
Drummond clematis	Clematis Drummondii
Hedgehog cactus	Echinocereus spp.
White brittlebush	Encelia farinosa
California buckwheat	Erigonum fasciculatum
Filaree	Erodium cicutarium
Ocotillo	Fouquieria splendens
Ambrosia bursage	Franeria ambrosioides
Triangle bursage	Franeria deltoidea
Creosotebush	Larrea tridentata
Desert deervetch	Lotus tomentellus
Lupine	Lupinus spp.
Anderson wolfberry	Lycium Andersonii
Little mallow	Malva parviflora
Tesota (ironwood)	Olneya tesota
Chollas, pricklypears	Opuntia spp.
Phacelia	Phacelia spp.
Desert indianwheat	Plantago insularis
Woolly indianwheat	Plantago Purshii
Mesquite	Prosopis spp.
Mediterranean grass	Schismus barbatus
Globemallow	Sphaeralcea spp.
Fivestamen tamarisk	Tamarix pentandra
Tree tobacco	Nicotiana glauca

Wildlife species inhabiting the project area include a wide variety of mammals, birds, amphibians, and reptiles.

Big game species are represented by small numbers of mule deer and javelina and an occasional mountain lion. These species more commonly inhabit the desert mountains and foothills but may occasionally be seen in more open desert country.

Small game species include cottontail rabbits, mourning dove, white-winged dove, and Gambel's quail. These species are associated principally with riparian vegetation but may be seen throughout the area. These species also use agricultural crops and decorative landscape plants for food and cover. Small grain crops provide a ready food supply for doves and quail. Citrus and decorative woody plants provide some roosting and nesting cover for doves.

Populations of small game species are highly variable depending upon short-term climatic conditions and human intrusion.

Fur animals generally are considered to include predatory animals. This group is hunted for fur or sport. Trapping for fur is seldom practiced in this area. Included in this group are: coyotes, foxes, bobcats, beaver, muskrat, ringtail cat, and raccoon. Species such as beaver and muskrat are closely associated with water and are found only along the Salt River. Most other species in this category are found throughout the desert, desert foothills, and mountains.

Waterfowl inhabiting the area, at least seasonally, include several species of ducks, geese, shore, and wading birds. These birds, for the most part, inhabit the open water and marshes associated with the Salt River. Duck and goose populations are relatively low during season, while many shore and wading birds are relatively plentiful.

About 200 species of song birds, insectivorous birds, and birds of prey inhabit the area during some or all of their life cycle. Many species live their entire life in the area while others spend only the summer or winter there. Others stop over for short periods during their spring and fall migrations.

Hunting for big game in the area is extremely limited. Increased urbanization and associated human activity has severely reduced big game populations. The increased human habitation has also reduced the area usable for large calibre rifle hunting.

Hunting for small game remains relatively popular. White-winged dove and mourning dove concentrate around grain fields in the fall, creating conditions for an impressive hunt. Gambel's quail and

cottontail rabbit are abundant locally. Small-game hunting pressure is heavy locally and seasonally. Some waterfowl hunting for waterfowl also occurs along the Salt River.

Nature study, bird watching, and photography are probably the most popular wildlife oriented activities in this area. The area is one of the most diverse in terms of bird and animal species in the nation. The importance of this area for bird watching is exemplified by the fact that naturalists, both amateur and professional, venture from all parts of the nation to observe the over 200 species of birds using the area.

The more important bird watching locations are those along the Salt River and those along the foothills of the Superstition Mountains. The type and distribution of vegetation in the area combined with climate create conditions which support a wide diversity of wildlife species.

The primary factor regulating wildlife populations and diversity, however, is habitat. The major natural vegetative types include mesquite-saltbush flats on low lands subject to overflow; creosotebush on gently sloping alluvial fans; and paloverde, bursage, and saguaro on moderately sloping valleys and foothills. Desert washes supporting scattered to dense stands of mesquite, ironwood, and other woody riparian trees are interspersed at fairly regular intervals throughout the major vegetative types. This natural interspersation provides woody nesting and roosting cover within a very short traveling distance of feeding areas and open space.

A small area of stream riparian vegetation consisting primarily of salt cedar and mesquite parallels the Salt River along the northwesterly watershed boundary. This woody vegetation associated with an abundance of water adds dimension to the diversity of habitat, hence, to wildlife species composition.

Agricultural development tends to provide an abundance of a single habitat requirement over a large area. Fields of small grain provide an abundance of feed for some species, and citrus orchards provide woody tree nesting for other species. These crops are in the field for only a short period of time and are subjected to cultivation, spraying, and harvesting activities which reduce the potential value to wildlife.

The most widely used wildlife management tool employed by game and fish agencies is the control of hunter use through seasons and bag limits of game species. Over a large area, wildlife management practices such as construction of watering devices, wildlife food-plot plantings, and manipulation of nesting and cover, are prohibitive. No physical habitat management of significance has been applied within the area.

The following species list shows those endangered species potentially occurring in the project area and their classification.

Endangered Wildlife 10/

<u>Common Name</u>	<u>Scientific Name</u>
Endangered	
Bald Eagle	<u>Haliaeetus leucocephalus</u>
Peregrine Falcon	<u>Falco peregrinus anatum</u>
Yuma Clapper Rail	<u>Rallus longirostris yumanensis</u>

Species such as the bald eagle are highly mobile. While the species are not known specifically to nest in or inhabit the watershed, observations of this species within the watershed would be possible.

The Salt River provides the only fishery resources of the area. Aquatic resources extend from Granite Reef Dam upstream for approximately one and one-half miles and consist primarily of reservoir and reservoir headwaters conditions.

Fish species found in these waters generally represent those of a warm water fishery. 11/ Fish species may be observed; however, which typically represent a significantly different water condition.

Winter temperatures bring about conditions conducive to the survival of cold water fish species. Under these conditions, rainbow trout may tend to move downstream from the trout fishing maintained in the cold outflow of Saguaro Lake.

Some fishing occurs in this area, but no attempt was made to quantify the use of this fishery for this report.

RECREATIONAL RESOURCES

One of the recreational developments within the project area is the Lost Dutchman Recreational Area which has been developed by the Bureau of Land Management. When completed, this site will total approximately 320 acres. There will be 400 camping units provided with paved roads, drinking water facilities, and restrooms with sewage treatment facilities. The Bureau of Land Management has performed demand studies and estimated 300,000 recreation-use days annually for the area.

The Maricopa County Parks and Recreation Department has developed two areas -- Usery Mountain Park and Bush Highway Park. Usery Park consists of ramadas, 16 picnic tables, and rustic restroom facilities. Future expansion of the park will provide a 56-target archery range and 36 picnic tables. The Bush Highway Park consists of two ramadas with tables and drinking water. One restroom facility with sewage treatment facilities is available, and a golf course is being planned as part of further park development.

The main scenic attraction near Apache Junction is the Superstition Mountains which are reputed to be the site of the Lost Dutchman Mine. Many people are still challenged by the thought of discovering the "Lost Mine" and search the mountains for its location. At the base of these mountains is Apacheland Movie Ranch and Studios, location for filming of many western movies and television productions.

The Apache Trail winds north from Apache Junction and is a scenic mountain drive to recreation areas such as Canyon Lake, Apache Lake, and Roosevelt Lake on the Salt River. On land administered by the Forest Service can be found other recreational developments. These include camping and other outdoor activities, although no developed facilities are available.

ARCHEOLOGICAL AND HISTORICAL RESOURCES

The project area is situated in a region that has received varying degrees of anthropological attention for nearly a half century. Archeological interest centers around the attempt to link the culture of the prehistoric Hohokam Indians to that of the modern day Indians that inhabit the region. The following brief description of the Hohokam culture gives some insight into why archeologists are continuing to try to reconstruct the chronological void that exists between the Hohokam era and modern times.

The first known permanent dwellers in the area were the Hohokam Indians who were known as the "canal builders". It is now believed that the Hohokam Indians settled in central Maricopa County about two thousand years ago. Designated prehistoric time periods are: Classic, Colonial, Pioneer, and Sedentary. They lived in small farming villages and their dwellings evolved from pit houses to structures built above ground, and then to concentrated villages which were eventually walled. They developed extensive irrigation works and farmed the area over a period of time. The largest of these canals was thirty feet wide and seven feet deep. There were over 125 miles of canals.

Sometime during the 1300's, the Hohokam Indians abandoned their fields and villages. Today it remains a mystery why they left and what became of these ingenious people.

Archeological reconnaissance and sampling surveys conducted along the floodway right-of-way and proposed spoil disposal areas have located and identified a total of forty-two archeological sites and one sherd scatter that lie within the area of proposed project activities. Thirteen of the sites are wholly or partially within the floodway right-of-way. The remainder are within proposed spoil disposal areas or subject to impact by access roads or realignment of an irrigation lateral.

The following list of brief site descriptions pertains to those sites within the floodway right-of-way that will be affected by channel construction and those that will be affected by realignment of the lateral. 12/

- | | |
|---|---|
| <u>AZ U:13:8(ASU)/</u>
<u>AZ U:13:150(ASM)</u> | An extensive site appearing to represent a series of garden plots associated with habitation units. |
| <u>AZ U:13:49(ASM)</u> | Consists of a series of small sherd and lithic scatters. Pottery types recovered from this site represent nearly the entire Hohokam sequence - Estrella through Cevano phase. |
| <u>AZ U:13:50(ASM)</u> | Sherd scatter of pottery representative of the Colonial and/or Sedentary phases. |
| <u>AZ U:13:58(ASM)</u> | Sherd scatter of pottery representative of the Santa Cruz phase. |
| <u>AZ U:13:60(ASM)</u> | Site consists of a recent Pima adobe house superimposed on a prehistoric Hohokam village evidenced by a Classic period mound, sherd assemblage, and abundant stone artifacts. |
| <u>AZ U:13:64(ASM)</u> | A segment of historic or prehistoric canal bordering the existing irrigation lateral. |
| <u>AZ U:13:65(ASM)</u> | Consists of both an historic Pima component comprised of two adobe structures and a prehistoric Hohokam component comprised of a large oval raised area on which are situated distinct mounds. Ceramics are indicative of Classic phase Hohokam. |
| <u>AZ U:13:67(ASM)</u> | Small sherd scatter representing the later Hohokam phases (Casa Grande and Gila) and modern Pima. |
| <u>AZ U:13:75 and</u>
<u>76(ASM)</u> | The floodway right-of-way was re-aligned to pass between these sites. Site 75 consists of a large, oval mound with five distinct smaller mounds identified as Classic Hohokam. Site 76 is an area of scattered sheet trash dating to Sacaton phase Hohokam. |

AZ U:13:120(ASM) A segment of canal that appears to be part of the historic Santan Canal. This segment is underlain by at least one earlier canal, and possibly another much earlier Pioneer period canal.

AZ U:13:8(ASM) A large Colonial and Sedentary phase Hohokam site also known as the Gila Butte site consisting of refuse mounds, a ballcourt, possible reservoir and a canal system. Subsurface house remains may exist between the mounds.

AZ U:13:51(ASM) Originally a thin sherd scatter. Subsequent investigations have not relocated the site.

Sites outside of the floodway right-of-way may be affected by the disposal of excavated material from the floodway. Brief descriptions of these sites follow and are presented on a section-by-section basis rather than individually.

Sections 1, T1S, R6E and 7, T1S, R7E.

The presence of agricultural crops prevented adequate investigations of proposed spoil disposal areas. Resurvey and needed testing will be done prior to construction.

Section 15, T2S, R6E.

Site AZ U:10:15(ASU) is a light scatter of sherds and artifacts dating to the Colonial/Sedentary periods. AZ U:10:16(ASU) contains three small, dense clusters of artifacts representing the Sedentary/Classic periods.

Sections 4 and 5, T3S, R6E.

Small clusters of artifacts are found throughout these sections. One site, AZ U:13:47 will not be affected by the project.

Section 8, T3S, R6E.

Scattered cultural material has been reported in the area. 13/

Section 17, T3S, R6E.

This section contains sites AZ U:13:49(ASM), AZ U:13:16 and 17 (ASU) which are large areas of scattered artifacts but are without evidence of significant trash mound development. Site AZ U:13:150 (ASM) represents an extensive area of surface features without much depth.

Section 13, T3S, R5E.

This section contains two habitation sites with extensive surface concentrations and mounds. The sites have been designated AZ U:13:18 and 19(ASU). Sites AZ U:13:20 and 21(ASU) are sherd areas within the section.

Section 14, T3S, R5E.

This section contains six sites, one of which would not be impacted - site AZ U:13:22(ASU), an historic Pima house. The relocated irrigation lateral will pass through the northern portion of AZ U:13:13 (ASU) which is a Classic period site consisting of three low mounds and a considerable sherd and lithic scatter. Sites AZ U:13:57 and 59(ASM) consist of light density scatters of artifacts. Site AZ U:13:62(ASM) is a possible historic cemetery and site AZ U:13:28 (ASU) is an historic adobe Pima house with an associated scatter of historic sherds.

Section 15, T3S, R5E.

Proposed spoil disposal activities in this section could impact three sites: AZ U:13:23 and 29(ASU) represent complexes of sites of high historic and scientific value. AZ U:13:29 represents a series of occupations from the Colonial Hohokam period into the Historic Pima phase. AZ U:13:23(ASU) consists of a complex of three mounds. One mound, AZ U:13:70(ASM) is associated with the remains of a Pima round house and associated artifactual debris. The remaining site, AZ U:13:65(ASM) was described in the section dealing with sites in the right-of-way.

Section 16, T3S, R5E.

Site AZ U:13:25(ASU) grades into sites AZ U:13:72 and 75(ASM). All are Classic period habitation sites containing sherd scatters and other artifacts. Site 25 contains mounds. A neighboring site, AZ U:13:24, is a Sacaton phase site consisting of sherds and other artifacts.

Section 21, T3S, R5E.

Site AZ U:13:8(ASM) extends into a proposed spoil disposal area for a limited distance. A nearby site, AZ U:13:27, was isolated as a scatter of sherds and lithics that are representative of the Classic and Sacaton periods.

The preceding inventory of cultural resources in the project area is a compilation of site descriptions representing reconnaissance, sampling and testing surveys conducted by professional archeologists from Arizona State Museum and Arizona State University. 12/ The most intensive investigation was conducted within the part of the floodway right-of-way that crosses the Gila River Indian Reservation. That survey concluded a series of investigations by the Arizona State Museum. 14/ The off-reservation portion of the floodway right-of-way was surveyed by the Office of Cultural Resource Management, Arizona State University. 15/ Proposed spoil disposal areas along the floodway were investigated in 1976 by Arizona State University. 16/ Survey of additional disposal areas on the reservation was completed in 1977. 13/

The significance of the cultural resources of the area is such that the State Historic Preservation Officer of Arizona has declared that they be part of an Archeological District.

SOIL, WATER, AND PLANT MANAGEMENT STATUS

Land use changes show the primary trend is toward increased urban developments. Those changes occurring between 1963 and 1975 are shown below.

Land Use Trend - Acres

<u>Land Use</u>	<u>1963</u>	<u>1975</u>
Cropland	99,545	80,775
Rangeland	182,805	176,925
Urban		
Residential and Commercial	19,915	34,285
Ranchettes	0	10,280
Total	<u>302,265</u>	<u>302,265</u>

Cropland went out of production and decreased by 18,770 acres and urban lands increased by 24,650 acres during this period. Cotton and vegetable acreage is less now than in 1963. The acreage of citrus, small grains, and sugar beets has increased. With the increase in ranchette-type developments, varying in size from three to ten or more acres, many landowners concentrate on production of hay and grain crops for horses. The increase in citrus production is also attributed, in part, to landowners with small acreages.

There are presently 89,236 acres of land considered adequately treated within the project area. A breakdown of this acreage shows 60,784 acres of cropland, 15,414 acres of urban land, and 13,080 acres in other land uses.

Conservation measures to control erosion and maintain proper soil condition are adequate. Improvement in the management of irrigation water has resulted in an estimated 65 percent efficiency of water use. The overall potential irrigation efficiency is 75 percent or more. To improve this overall irrigation water efficiency, continuing emphasis will be given to more accurate measurement of irrigation water and more careful timing of irrigations. Drip or bubbler irrigation methods, popular with citrus crops, are a means of controlling erosion and increasing water use efficiency.

The ongoing land treatment program for rangeland will continue to emphasize measures and practices to control erosion and sediment and provide proper grazing.

Any sediment or erosion problems on urban land are normally handled quickly by the owner.

The East Maricopa Natural Resource Conservation District (NRCD) provides technical assistance to cooperators in soil and water conservation programs. They have been actively engaged in a broad range of soil and water conservation programs for more than twenty-five years.

There are 468 farm and ranch units of which 448 (96 percent) are cooperators with the East Maricopa NRCD and 292 (65 percent) of these cooperators have conservation plans. A total of 138,245 acres of private land, representing 46 percent of the project area, is under cooperative agreement with the NRCD. A portion of this land is state land leased to private landowners. Conservation plans include 73,674 acres (53 percent) of the land under cooperative agreement.

The Bureau of Indian Affairs is furnishing technical assistance to Indian landowners and users for application of needed land treatment measures.

Federal lands administered by the Forest Service, about 23,456 acres, and the Bureau of Land Management, 3,668 acres, are included in multiple-use management plans. The 77,494 acres of state-owned land are leased to private landusers. The land use on state lands is rangeland.

PROJECTS OF OTHER AGENCIES

The Consolidated Canal East Branch and Eastern Canal are both operated and maintained by the Salt River Project, while the RWCD Irrigation Canal is operated and maintained by the Roosevelt Water Conservation District (RWCD). The RWCD Floodway will provide floodwater protection to these irrigation systems.

The U. S. Army Corps of Engineers constructed the Whitlow Ranch Dam on Queen Creek in 1960. This floodwater retarding structure controls runoff from approximately 143 square miles in the upper portion of the Queen Creek Watershed. The U. S. Army Corps of Engineers has been authorized under Section 6 of the Flood Control Act of 1938 to study the area west and downslope of the RWCD Floodway. This study concludes that no Corps of Engineers flood control improvements west and downslope of the RWCD Floodway are justified at this time. The results of this study are summarized in the "Summary Report for Flood Control - Gila Floodway".

The Bureau of Reclamation has started construction on the Central Arizona Project (CAP). This is a multi-purpose project that annually will convey an estimated 1.2 million acre-feet of Colorado River water to central Arizona. The Salt-Gila section of the aqueduct will be located east of the floodway. The distance will vary from three to seven miles.

WATER AND RELATED LAND RESOURCE PROBLEMS

LAND AND WATER MANAGEMENT

Land and water management programs in the cropland areas of the study area are among the most up-to-date and efficient in the nation. Farmers are knowledgeable about input-output relationships and are interested in making efficient use of factors of production. Costs of production are high. High yields, which are necessary to offset the high costs of production, are dependent upon the timing of inputs. The landowners and operators are willing and able to install needed land treatment measures in order to insure efficient production.

The majority of the forage produced on rangeland is comprised of annual forbs and grasses with yearly production extremely variable depending upon rainfall. The rangeland condition throughout the area is classified as follows:

Excellent Condition	1%
Good Condition	16%
Fair Condition with Sufficient Cover to Protect the Soil	7%
Fair Condition with Slight to Moderate Erosion	7%
Poor Condition with Sufficient Cover to Protect the Soil	15%
Poor Condition	54%

Some native perennial grasses, forbs, and shrubs have been eliminated from some of the rangeland by continuous grazing pressure. This vegetation has been replaced by drought tolerant or invading annual plants and/or unpalatable or armored woody and succulent plants. A great deal of time and careful management will be required to reverse the present trends. The economic return per acre on rangeland is low; therefore, most ranchers cannot afford to spend large sums of money for land treatment measures. The less expensive practices such as proper grazing are being established.

As land is developed for urban use, vegetation and soil armoring are removed. This leaves the land vulnerable to wind and water erosion. This protection is reestablished shortly after the buildings are occupied.

FLOODWATER DAMAGE

Historical records indicate forty floods of varying magnitudes have occurred in the project area since 1910. These floods have damaged croplands, urban and commercial properties, roads and highways, irrigation canals, and other facilities. Twenty-seven floods occurred during the summer months and thirteen floods occurred during the winter months. Runoff in 1926, 1930, 1941, 1943, 1954, 1959, 1966, and 1971 caused particularly serious damage. The floods, although varying in size, have occurred on the average of once every one and one-half years.

The flood damages experienced during 1954 are typical of damages associated with larger storms. ^{17/} Approximately 35,370 acres of highly productive cropland were inundated. This acreage included 9,500 acres of alfalfa, 2,130 acres of citrus, 15,650 acres of cotton, 6,140 acres of small grains, and 1,950 acres of vegetables. Damage to cotton and vegetables accounted for the majority of the crop losses. The crop loss experienced in 1954 would amount to about \$4 million at current values.

The depth of flooding experienced during the 1954 storm varied from four inches to three feet in the residential and commercial areas east of the RWCD Irrigation Canal. The urban and commercial developments have increased since the occurrence of this flood. The present value of urban properties subject to damage from a flood of this magnitude is about \$120 million.

There was also flood damage to approximately 100 miles of state and county roads. Traffic on U. S. Highway 60-80-89 was interrupted for several hours due to floodwater flowing across the road. Rail traffic along the Southern Pacific Railroad was delayed as water threatened to breach the tracks. The dike that protects the RWCD Irrigation Canal broke; floodwater and sediment damaged the canal for a length of six miles.

Floodwaters flowing overland often damage septic tanks. As a result, floodwaters could become polluted.

The adverse effect on residents is apparent. Many retired couples live on limited incomes. The economic recovery from floods requires time as material gains are few and often obtained with much sacrifice.

Although the Powerline, Rittenhouse, and Vineyard Floodwater Retarding Structures and the Whitlow Ranch Dam provide partial protection in the project area, a flood expected on the average of once in 100 years would seriously affect the economy of this area. A flood of this magnitude would inundate about 18,220 acres below the RWCD Floodway. The inundated area would consist of 8,460 acres of cropland, 580 acres of rangeland, and 9,180 acres of urban lands.

It is estimated at least 150 farms and 10,000 homes would be affected by the flood occurring on the average of once in 100 years.

Runoff water that collects in the present RWCD Floodway is diverted onto the Gila River Indian Reservation from an area in excess of 700 square miles. This water would not normally flow onto the Reservation at the present location.

EROSION DAMAGE

Other than scour, erosion has not been a major problem. Erosion rates in the uncontrolled drainage area upslope of the RWCD Floodway are generally low. The estimated erosion rates range from .03 to 0.3 tons per acre annually on the irrigated cropland. On rangeland the annual erosion rates are estimated to range from 0.1 to 0.8 tons per acre while the annual erosion rates on urban land range from .03 to 2.0 tons per acre. The higher erosion rates on urban lands are due to disturbance of vegetation and surficial materials during construction activities. These disturbances are generally of short duration. The reestablishment of vegetation by landowners and/or the natural development of a protective gravel surface usually results in reversal of erosion rates to or lower than the original rates which existed prior to the disturbance.

The erosion damage during flood events occurs mostly where flows break through on-farm dikes and ditches. Farmers are required to haul in fill material to replace soil which is scoured and relevel the fields in order to regain proper irrigation grades on cultivated fields.

In addition to the loss of soil due to flood plain scour, there is loss of potential productive capacity of the soil. This loss is reflected in lower crop yields, change in cropping patterns, and more intensive soil management practices.

SEDIMENT DAMAGE

Although erosion rates are low, sediment deposition is widespread because of inadequate natural channel capacities and resultant lateral sheetflow over wide areas. Sediment deposition occurs in floodways, tributary channels, road ditches, and irrigation canals; and on agricultural lands, urban lands, desert lands, and roadways.

There are two areas where a large amount of bedload sediment is deposited in the floodway. One is downstream from the Powerline Floodway. The other is in the vicinity of Queen Creek. It is estimated that the average annual deposition is 10 acre-feet (18,000 tons) of bedload sediment. Between the end of the existing floodway and St. Johns Mission on an average annual basis, about 7 acre-feet (11,000 tons) of sediment is deposited while 17 acre-feet (25,000 tons) of sediment is transported to the Gila River under present conditions. Downstream of St. Johns Mission the Gila River, on an average annual basis, transports an estimated 95 acre-feet of suspended sediment.

Sediment damage to cultivated fields and associated farm facilities in 1954 totaled \$584,000. Fields with heavy sediment deposition had to be releveled in order to maintain irrigation grades. Alfalfa fields suffered heavy damage from the "smothering" effect of sediment. This caused the loss of several hay cuttings. Crop yields are also reduced when debris and sediment deposits interrupt the proper distribution of water on the fields. Also, sediment was deposited in irrigation ditches. This reduced the carrying capacity of ditches and did not allow proper amounts of water to reach the crops. This resulted in reduced crop yields.

On-farm irrigation ditches had to be cleaned out in order to maintain irrigation capacity. Private wells serving both agricultural and nonagricultural interests also had to be cleaned out. Crop yields are also reduced when debris and sediment deposits interrupt the proper distribution of water on the fields.

To remove sediment from urban and commercial establishments as well as roads and highways was estimated to cost \$95,000 after the 1954 event. These problems will increase as the urban area expands.

IRRIGATION PROBLEMS

All cropland is irrigated. The total acreage under irrigation is 80,775 acres. Very little water used by crops is supplied by rainfall. Urban development is encroaching on the irrigated land.

The irrigation water is supplied through the facilities of the Roosevelt Water Conservation District, the Salt River Project, and private wells. The source of this supply is from surface water which is diverted from the Salt River system. Surface water from the Salt River system allocated to cropland is estimated to be 670,000 acre-feet. The Roosevelt Water Conservation District, Salt River Project, and private individuals augment their surface water with water from wells.

Ground water levels are being reduced because of the continual use of these wells to supply the present demand for water. This, in effect, increases the cost of pumping and creates a higher cost of water for the areas served. Both the surface and ground water sources of supply have a moderate salinity hazard, but no serious salt problems exist. 8/

The major ground water problem in the Salt River Valley and Lower Santa Cruz Basins is the rapid rate of depletion of the resource. The rate of withdrawal of ground water greatly exceeds ground water replenishment through recharge. As a result, the depth to the water table is increasing. Since 1930, the depth to the water table has increased as much as 160 feet in some parts of the project area. During the period from 1957 through 1964, the water table in the portion of the Lower Santa Cruz Basin into which the floodway outlets declined 57 feet. 18/



Floodwaters cause major damage in the area of the RWCD Floodway and adjacent agricultural lands. (Bureau of Indian Affairs photo)



Flood damage to crops and utilities will be reduced by the construction of the floodway. (Bureau of Indian Affairs photo)





Floodwaters cause break of RWCD Canal and existing floodway and loss of soils. (Bureau of Indian Affairs photo)



Inundation of agricultural lands from flood occurring December 1967. (Bureau of Indian Affairs photo)



Because of large scale withdrawal of ground water, land subsidence in this project area is a problem. ^{19/} Measurable land subsidence has occurred in the vicinity of the floodway. Geodetic control data indicates that subsidence of one to three feet occurred between 1948 and 1967 north of the Maricopa-Pinal County line.

An associated phenomena is the development of earth fissures. These are linear features which generally appear as narrow openings on the earth's surface. These fissures may extend to great depths. Where these fissures intercept runoff water, they generally widen due to erosion. The most common areas of occurrence of earth fissures appear to be in alluvial materials adjacent to mountain fronts near locations where ground water withdrawal is occurring. It is not possible to accurately predict where they may develop. There are no known earth fissures associated with the proposed RWCD Floodway alignment.

Land management systems for an estimated 63,595 acres of cropland are considered adequate, while 17,180 acres are considered inadequately managed. In managing cropland, the primary need is to increase the overall irrigation water use efficiency. In managing citrus groves, frost control is necessary.

Phreatophyte and insect borne disease control is not a problem.

MUNICIPAL AND INDUSTRIAL WATER PROBLEMS

The principal source of municipal and industrial water is ground water. The ground water ranges in depth from 57 to 360 feet. Ground water levels are declining at an alarming rate of approximately ten feet annually. In some areas, the depth to the water table has increased as much as 160 feet since 1930. Future surface water for municipal purposes may be acquired from either the Salt River or the Central Arizona Project.

The population is expected to increase from about 130,000 in 1974 to 330,000 by the year 2000. The demand for municipal and industrial water is projected to increase approximately 250 percent or more. Consumptive use per capita is about 140 gallons per day at present and is projected to be over 175 gallons per day by the year 2020. Water supplies should be adequate to satisfy demand in the year 2000.

RECREATION PROBLEMS

In the vicinity of the project, the only water available for recreation is the Salt River. Water is of good quality with most sediment controlled by the upstream system of structures on the Salt and Verde Rivers. Water-related recreational facilities are available outside the project area at the system of lakes on these two rivers.

Recreation resources are available to the public and a majority of the developments are on public lands. These recreational facilities are used on a year-round basis.

Recreation demand is greater than normally would be expected. Residential development, much of which is oriented toward retirement community accommodations, is expanding at a rapid rate. The population in the Phoenix metropolitan area is expected to be 1.3 million in the year 1980, 1.9 million in the year 2000, and 2.3 million by the year 2020. 20/

PLANT AND ANIMAL PROBLEMS

The current land use trend is the conversion of native desert land and cropland to residential use. This land use conversion rate is high because of the climate and the proximity of this area to metropolitan Phoenix. This trend causes a reduction in wildlife habitat.

There is little loss of wildlife or habitat due to flooding. In fact, natural vegetative growth is stimulated by periodic flooding. The problem associated with this area is not one of providing additional wildlife habitat but of retaining existing habitat in the face of urbanization.

Wildlife inhabits stream and desert riparian vegetation in greater numbers than the other habitat types in the project area. Activities of man are encroaching on both types of riparian vegetation.

WATER QUALITY PROBLEMS

The largest potential contributor to non-point pollution is cropland. The amount of pollution is dependent on land management and land use practices. Poor land management significantly contributes to poor water quality. Neither the extent of chemical and organic pollution nor the turbidity and temperature in flood flows have been determined. There are no water quality monitoring programs in the project area.

The existing washes are ephemeral in nature and have a very limited capacity. During the runoff periods, channel capacities are exceeded and water flows overland as sheet flow. The primary pollutant in the runoff water flowing over the upland desert is sediment. Average annual suspended sediment expected to reach the existing floodway is about 4,000 milligrams per liter.

Urban sewage waste is normally put in individual septic tanks. These tanks are subject to flood damage; the resultant floodwater could become polluted. Towns such as Chandler, Gilbert, and Mesa and the Williams Air Force Base do have sewage treatment plants.

Dissolved salts are the primary pollutant of drinking water in this area. Concentrations sometimes exceed 500 parts per million (ppm). 8/ Because of the lack of availability of water from other sources, water with this undesirable quality is sometimes used to drink and to irrigate crops. There are no known major adverse health effects from using this water.

AIR QUALITY PROBLEMS

The rapid growth of population in the Phoenix metropolitan area has contributed to a deterioration in the air quality. The increase in the number of homes, offices, industries, and vehicles has resulted in air pollution problems. These include the increased burning of fuel for the additional power required to heat, cool, and light new homes and offices. Airborne dust is also a problem.

ECONOMIC AND SOCIAL PROBLEMS

There are an estimated 219 family farms located in the project area and nearly all families have an income of over \$3,000. Many families supplement their farm income with off-farm employment. On the average, one and one-half man-years of hired labor are used on 249 of the remaining 468 farms.

The area is experiencing rapid urbanization. The population and the economy are growing rapidly. Both irrigated cropland and desert land are being developed. The cropland being developed for residential and commercial use is among the most productive in the United States. As the desert land is developed, the scenery and desert ecology are affected. The open space enjoyed by present residents is being replaced by housing.

As more people establish residence farther from the principal city centers where many of the jobs are, there will be an increase of energy used for transportation.

The unemployment rate was estimated to be eight percent in Arizona during December 1974. However, this does not represent the normal economic condition. With the Phoenix metropolitan area in such proximity, there are ample job opportunities.

RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

Planning departments of cities and the county in cooperation with the Maricopa Association of Governments, Transportation, and Planning Office have made estimates of the magnitude and distribution of future (through year 2000) populations and concomitant housing for Maricopa County. The Pinal County Planning and Zoning Department supplied the projections for the portion of the project area in Pinal County. The project, as formulated, conforms with these projections.

The Maricopa County Board of Supervisors recently approved changes to the subdivision regulations that require detention facilities be included in all new subdivision plats to detain a 100-year, two-hour storm. The Board of Supervisors will enforce these regulations in such a manner that the volume of storm water to be stored for the area between the system of floodwater retarding structures and the Roosevelt Water Conservation District Floodway will equal or exceed one (1) inch over the newly developed area. With this on-site storage of increased runoff coming from all future urban development areas and an adequate internal drainage system installed, projected residential, commercial, and industrial properties will be subject to less flood damage.

In March of 1973 the Arizona Water Commission prepared a State Flood Control Program. The RWCD Floodway is a part of the "...physical works required to protect the people already living in Arizona from loss of life, extensive property damage, and inordinate inconvenience."

The Flood Control District of Maricopa County was established in March 1959 and encompasses the entire county. In August 1973 the District prepared a Comprehensive Flood Control Plan for the county. The RWCD Floodway is a part of this coordinated flood control program.

The unincorporated areas of Maricopa County became eligible for flood insurance under the National Flood Insurance Program on December 31, 1970. The Federal Insurance Administrator is responsible for identifying flood hazard areas and supplying the communities with the data necessary for the development of a sound management program for flood-prone areas. The plan is to provide flood insurance on existing structures and their contents and to discourage the building of additional structures within the flood plain. The RWCD Floodway will be instrumental in reducing flood insurance rates.

The 1973 State Legislature enacted into law House Bill 2010 relating to flood plain management in Arizona. The law specifically requires that local jurisdictions delineate flood plains where development is ongoing or imminent. Further development within delineated areas is to be restricted unless accomplished in accordance with regulations adopted by the local jurisdiction or under a special use permit. Maricopa County has submitted flood plain regulations as required.

Efforts are being made to control air pollution in the area before it reaches a critical stage. This responsibility is shared by the State of Arizona and Maricopa County. Because of climatic factors, the Phoenix metropolitan area, which includes the project area, has unique air pollution problems. The area has difficulty meeting federal standards for particulate concentrations because it is a desert environment, and the wind constantly transports the desert particulates. Another federal standard that the area has difficulty meeting is the carbon monoxide standard. The gaseous pollutant problem is aggravated by the inversion factor--pollutants build up during the day, and the sharp drop between day and evening temperatures trap the pollutants in the atmosphere, preventing their dissipation. The threat of inversion is especially critical during December, January, February, and March. The annual average concentration of sulfur dioxide and nitrogen dioxide has not exceeded federal standards since continuous monitoring was initiated. Pollutants will be added to the air by equipment during the construction of the floodway.

Determination of the suitability of water for domestic use is generally based on the dissolved solids content. The U.S. Public Health Service Drinking Water Standards (1963) indicate that domestic water supplies should not exceed a total dissolved solids limit of 500 milligrams per liter (mg/l). The quality of ground water varies depending primarily upon the mineralogical composition of the aquifer from which water is pumped. Most of the wells in the project area produce water containing 500 to 1,000 mg/l dissolved solids, but some range as high as 1,500 mg/l.

ENVIRONMENTAL IMPACT

CONSERVATION LAND TREATMENT

The land treatment measures proposed in the original work plans for the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds were designed to reduce runoff, erosion, and sediment. These measures also contribute to better irrigation water management, an increase in infiltration rates of the soils and an increase in crop production. Erosion rates in the uncontrolled drainage area upslope of the RWCD Floodway are generally low. The estimated erosion rates range from .03 to 0.3 tons per acre annually on the irrigated cropland. On rangeland the annual erosion rates are estimated to range from 0.1 to 0.8 tons per acre while the annual erosion rates on urban land range from .03 to 2.0 tons per acre.

The average annual bedload deposition rate in the RWCD Floodway is 10 acre-feet. An area where some suspended sediment is deposited is in the desert downstream from the end of the existing floodway. On an average annual basis, about 7 acre-feet of suspended sediment is deposited in this area. On the average, an additional estimated 17 acre-feet of suspended sediment, from the project area, reaches the Gila River annually under present conditions. Downstream of St. Johns Mission the Gila River, on an average annual basis, transports an estimated 95 acre-feet of suspended sediment.

Slight increases in erosion rates are expected in the future as land development occurs. After installation of the RWCD Floodway, bedload sediment deposition will occur mainly in the floodway sediment traps and contributing drainageways or the floodway. The average annual amount of bedload deposited will be about the same as at present (10 acre-feet). With project, the average annual amount of suspended sediment transported to the Gila River will be increased by 8 acre-feet. This increase is attributed to increased channel efficiency and land use changes (1 acre-foot) and the elimination of ponded floodwaters (7 acre-feet). No longer will this suspended sediment (7 acre-feet) be deposited downstream of the existing floodway outlet or that sediment (17 acre-feet) that reaches the Gila River be transported to the vicinity of St. Johns Mission, but this amount (24 acre-feet) will be discharged into the River at the floodway outlet. Hence, this sediment will be transported through the reach of the river from the floodway outlet to the vicinity of St. Johns Mission increasing the amount of sediment in suspension to about 103 acre-feet. The average annual amounts of suspended sediment transported or deposited can be seen in the following table.

Average Annual Amounts
Suspended Sediment - Acre-Feet

<u>Condition</u>	<u>Transported Overland to Gila River in Vicinity of St. Johns Mission</u>	<u>Deposited Downstream from the Existing Floodway</u>	<u>Transported to Gila River at Proposed RWCD Floodway Outlet</u>	<u>Transported by Gila River to Vicinity of St. Johns Mission</u>
Present	17	7	0	95
With Project	<u>0</u>	<u>0</u>	<u>25</u>	<u>103</u>
Change	-17	-7	+25	+8

Suspended sediment concentration for the average annual runoff to the RWCD Floodway is estimated to be about 3,920 milligrams/liter (mg/l) under present conditions. In the future the average annual suspended sediment concentration is estimated to be 4,213 mg/l, with or without the RWCD Floodway.

Published water quality records for the U. S. Geologic Survey gaging station at Kelvin were reviewed in order to get an idea of the quality of water in the Gila River. For the period October 1965 through September 1970, the average sediment concentration was 5,494 milligrams per liter (mg/l). During the same period, concentrations ranged from 5 to 187,000 mg/l.

Gila River floodflows of less than 1500 cfs at Ashurst-Hayden Diversion Dam are diverted into the Florence-Casa Grande Canal. Flows greater than this will flow over the dam and will carry related suspended sediment concentrations.

Average annual damage reduction benefits will amount to \$1,996,230. The degree of flood protection will vary with the distance from the floodway. Reduction in flooding downslope of the floodway can be seen on the following table.

Reduction in Flooding Downslope of the RWCD Floodway
1975 Land Use - Acres

<u>Land Use</u>	<u>Present Condition</u>		<u>Year 2000</u>	
	<u>Without Project</u>	<u>With Project</u>	<u>Without Project</u>	<u>With Project</u>
Cropland	14,290	7,450	8,460	4,410
Rangeland	580	300	580	300
Urban Lands	<u>3,350</u>	<u>1,750</u>	<u>9,180</u>	<u>4,790</u>
Total	18,220	9,500	18,220	9,500

Ninety percent of the cropland in the above table is considered prime farmland. The majority of that remaining is considered land of local importance.

NONSTRUCTURAL MEASURES

There have been a number of studies related to the control of floodwater runoff for the area below the RWCD Floodway. The intensity of planning has been limited to the study of alternatives that would provide solutions to storm runoff problems. There are at present no existing floodwater collector systems or outlet channels for the developed urban area. Maricopa County officials recognize this problem and are working toward a solution. Until the internal drainage system is installed, flooding will continue. There will be reduced hazard to loss of life when the project is installed.

As residential or commercial development occurs in areas subject to sheet flow, the flood hazard should be recognized and adequate floodwater removal systems should be installed. Areas of ponding behind canal levees, elevated roads, or railroad embankments should be identified and development regulated.

STRUCTURAL MEASURES

The floodway will provide an adequate outlet to the Gila River for one floodwater retarding structure proposed for the Buckhorn-Mesa Watershed and structures installed in the Apache Junction-Gilbert and Williams-Chandler Watersheds, thus assuring the damage reduction planned for these watersheds. The level of protection in the project area is not changed. The floodway will intercept and divert floodwaters and also provide an outlet for flood prevention measures being planned for the Lower Queen Creek Watershed.

If the anticipated control of Queen Creek is not attained the reach of floodway downstream of the junction with Queen Creek will be subject to overtopping. Overtopping can be expected from flood flows recurring on the average of once in 30 years. On the Gila River Indian Reservation the floodway will reduce the area flooded by the 100-year event from 33,200 acres to 10,280 acres.

The diverted floodwaters, on an average annual basis, is equivalent to a volume of 6,700 acre-feet. This volume is compared to an average of 16,600 acre-feet that at present flows annually and has been measured at the gaging station on the Gila River at Laveen.

The diverted flows will cause an area along the Gila River to be flooded more frequently. The 100-year discharge from the RWCD Floodway is expected to inundate approximately 10,000 acres of native vegetation in the reach of river from the floodway outlet to the vicinity of St. Johns Mission. This same area is presently flooded, on the average, once every four years from flows in the Gila River.

The peak discharge from the RWCD Floodway will be greatly reduced by Gila River channel storage and transmission losses within the Gila River channel and flood plain. The result will be that the peak flow for any given discharge reaching the vicinity of St. Johns Mission, the present outflow point, will be about the same as that now experienced.

The relationship of discharge to frequency of floodwater coming from the project area and by the Gila River is compared in the following table.

Relationship of Discharge to Frequency of Discharge
from Project Area and for Gila River

<u>Frequency</u> <u>Avg. Recurrence-Yrs.</u>	<u>Annual Peak Discharge - cfs</u>	
	<u>RWCD Floodway</u>	<u>Gila River</u>
100	8,700	78,400
50	6,100	60,500
10	2,200	24,500
5	1,200	13,900
2	350	5,600

The 100-year annual peak discharge from the project area is equivalent to the 3-year annual peak discharge from the Gila River.

Another downstream impact will be on a road and bridge that crosses the Gila River which is about 12 miles downstream from the planned outlet of the RWCD Floodway. This project will greatly relieve the floodwater problem in the vicinity of the Maricopa Highway which is in Maricopa County and within the flood plain. However, in Pinal County it is readily apparent that the Maricopa Highway bridge crossing the Gila River will experience increased floodwater and sediment problems. These

increased problems are considered insignificant because the bridge now has limited capacity through which to adequately allow floodwaters to flow. On the average, nine out of every ten years, and generally two or three times in any one year, floodwaters overtop the bridge.

Considering no flow in the river, the planned discharge from the floodway will exceed the bridge capacity on the average of the once every five years. Considering the combined flows and the associated probabilities of resulting peak flows, it is concluded that the added discharge from the floodway will have an insignificant impact.

The areas directly disturbed by construction or disposal activities total 1,417 acres and are shown by vegetation type in the following table.

Land Disturbance Resulting from Project Installation - Acres

<u>Land Use</u>	<u>Floodway</u>	<u>Disposal Areas</u>	<u>Total</u>
Present Floodway	204	0	204
Cropland	304	126	430
Rangeland			
Desert Riparian	172	106	278
Desert Shrub	<u>152</u>	<u>353</u>	<u>505</u>
Total	832	585	1,417

Approximately 204 acres of the existing floodway will be needed for project installation. The existing floodway is vegetated with relatively low quality desert shrubs--primarily grasses and forbs--which provide limited habitat for a few ground dwelling species of wildlife.

An estimated 430 acres of irrigated cropland are required for project installation. The project area contains 80,775 acres of irrigated cropland. Crop production in the project area will be reduced approximately 0.5 percent because of reduced cropland acreage.

Approximately 430 acres of cropland will be taken out of production with the project. It is estimated that 390 acres of this total is prime farmland and the remaining 40 acres is productive enough to be considered locally important. There are 80,775 acres of cropland in the project area and the reduction in crop production is estimated to be .05 percent which is in direct proportion to the reduction in cropland.

About 278 acres of desert riparian vegetation and 505 acres of desert shrub vegetation will be cleared during project construction. The desert shrub vegetation consists primarily of paloverde, bursage, and creosotebush. The desert riparian vegetation consists of ironwood and paloverde.

Within the "triangle", the predicted changes in wildlife habitat caused by project installation are that open stands of high desert saltbush will not show any change. Open stands of mesquite and desert saltbush will reduce in density and vigor; however, plant composition will remain about the same. Medium stands of mesquite and desertbroom will have severe die-off by the end of five years. Dense stands of mesquite, desertbroom, seepwillow, wolfberry, saltcedar, and grasses will have a severe reduction in vegetative cover. Phreatophytes will be replaced by a desert riparian community.

The impact on vegetation resulting from diverting flood flows, from the area west of Highway 93, is judged to be minor and no mitigation is included in this plan for this area.

Utility services will be interrupted for short periods of time during construction. About 1,500 feet of water pipelines, 14,000 feet of telephone lines, 15,400 feet of electric lines, 2,600 feet of gas pipelines, and 600 feet of telephone cable will be relocated. Interruptions will be held to a minimum.

Irrigation facilities will be relocated. These include 3,400 feet of irrigation pipeline, two tailwater ponds, and 1.7 miles of irrigation lateral. These relocations will be made so that interference with irrigation schedules will be minimal.

Fishing resources of the project area are restricted to the Salt River and Granite Reef Dam area. Available fishing will not be affected by project construction.

There are no impacts to known recreational areas resulting from project action.

Ground water recharge will increase by about 1,300 acre-feet per year. This will occur in the floodway and the Gila River. Analysis of stream channel losses in the Gila River indicates high recharge potential. 21/ Considering the amount of ground water in storage, the effects of the project will be minimal.

Construction of the floodway and outletting floodwater into the river will provide an increased reach of riverbed to be used as a recharge basin and, also, to supply supplemental water to be used by riparian-type vegetation.

Air pollution in the form of dust will occur during the construction period. Noise levels and traffic disruption around construction sites will increase.

There will be no closures of dedicated or accepted roads and bridges resulting from the project. Seventeen road bridges and two railroad bridges will be constructed. Travel time to any point in the project area will not be significantly influenced.

The northern portion of the floodway will pass through several urbanized areas. Four owner-occupied dwellings and three businesses will be affected. Relocations will be made in accordance with P.L. 91-646.

The land rights required will remove 945 acres from the tax rolls. This includes 280 acres that will be purchased for wildlife habitat mitigation purposes. The present tax foregone by project installation is estimated to be \$35,300 annually.

Erosion and flood plain scour will be reduced in the areas protected from flooding. These problems will be materially reduced. In areas protected, it will not be necessary to fill and relevel yards and fields after flooding. Topsoil will be protected, and the fields will be more productive.

Along with the reduction of flooding downslope of the floodway, flooding also will be reduced in areas on the Gila River Indian Reservation. This will be the incidental result of extending the RWCD Floodway to the Gila River.

Flood control will aid in stabilizing the agricultural industry in the immediate area. It will also reduce the frequency and amount of flooding on agricultural lands downslope of the floodway. However, with or without the project flooding will still occur upslope of the floodway. Impacts of agriculture on water quality are the additions of nutrients from fertilizers and animal wastes and pesticides applied to crops and livestock. With flood protection these impacts will be reduced.

The floodway and associated maintenance roads will have a visual impact on the rapidly developing area. The reaches most affected will be where the channel has a wide bottom width and is parallel to roads, at road crossings, and where it is in proximity to urban areas.

The landscape design goal is to minimize the visual impact of the floodway. A visual resource analysis has been performed that identifies the landscape quality and also gives guidelines for landscape designs. Specifically, it has been determined that the areas with the greatest visual impact will receive the maximum landscape treatment. Landscaping will include seeding native grass species and planting trees and shrubs along the upslope side of the floodway on both sides of the roads. As the trees grow they will block the view of the floodway from most viewers.

Disposal areas will also have a visual impact. To lessen this impact, these areas will be planted to native vegetation. However, the Sponsors could dispose of the spoil elsewhere, thus the visual impact of these disposal areas could diminish in time.

Disturbed areas will be shaped and seeded to native grass species. On the floodway bottom seeded native grasses may be covered with sediment or lost because of maintenance operations. However, this vegetation has the potential to return when sufficient runoff water flows down the floodway. On constructed floodway banks or spoil disposal slopes such seedings will be successful in spots depending on soil, moisture, and weather conditions. Where necessary or desirable, within the floodway right-of-way, desert riparian vegetation, including paloverde and ironwood, will be planted. Runoff water originating upslope and flowing into the right-of-way area will provide water for seeded grasses and tree and shrub plantings.

These plantings partially mitigate wildlife habitat losses which will be caused by construction activities. Wildlife populations that depend on habitat destroyed during construction will be lost. These populations are expected to be reestablished when planted vegetation becomes sufficiently mature to satisfy food, cover, and nesting requirements.

The remaining mitigating measure to offset the wildlife habitat losses resulting from the project, is to purchase, preserve, and manage lands with comparable habitat values for wildlife purposes.

The archeological resources that have been identified in the project area are listed and described in the Environmental Setting section of this statement. Adverse impacts will occur to those archeological sites that lie within the rights-of-way of the floodway and irrigation lateral. The adversity being the disruption or obliteration of cultural features and artifacts. The resources within proposed spoil disposal and access road areas potentially will be adversely affected by construction activities and vehicular traffic.

In an effort to minimize and avoid impacts on as many sites as possible, the Soil Conservation Service has modified the proposed floodway right-of-way to avoid several large sites 14/; contracted with Arizona State University to investigate the off-reservation portion of the floodway 15/ and all proposed spoil areas 13/ 16/; consulted with the State Historic Preservation Officer, the National Park Service-Interagency Archeological Services and the Office of Cultural Resources Management-Arizona State University about comprehensive archeological mitigation for the project; and has contracted with the latter for development of an archeological resource management plan 12/.

The archeological resource management plan will include clearance and mitigation recommendations made by Arizona State Museum 14/ as well as testing requirements based on Arizona State University reports 13/ 15/ 16/. The testing program will determine the needs for a comprehensive plan of recovery, protection and/or preservation of cultural resources. Certain sites have been identified as having in situ value and will be avoided during project construction.

Development and implementation of both the management plan and the mitigation plan will be a team effort which includes the State Historic Preservation Officer, the Interagency Archeological Services, and the Advisory Council on Historic Preservation. Recovery and preservation of data and resources will be in accordance with "The Archeological and Historic Preservation Act of 1974", P.L. 93-291 (16 U.S.C. 469 et. seq.) and Title 7 CFR, Part 656. 3/

ECONOMIC AND SOCIAL

Floods disrupt the local economy and contribute to a general loss of business. Property is damaged and property owners are inconvenienced. Labor employed in productive endeavors must be diverted to repairs of residential and commercial damages. These conditions will be greatly alleviated, and residents and property owners will realize a better sense of security and safety without the threat of flooding.

The effects of the project will be an increase in production of goods and services. The additional production will require harvesting, marketing, and processing; thus more jobs will be created.

The installation of the proposed structural measures will create 188 man-years of skilled employment valued at \$4,700,000 and 47 man-years of semi-skilled jobs valued at \$700,000 during the construction period.

The skilled jobs will be for such workers as equipment operators and carpenters, while semi-skilled opportunities will be filled by laborers involved in project construction work.

The operation and maintenance of the structural measures will create an average annual employment equivalent of at least three permanent jobs.

There will be a separation of urban developments with the installation of the floodway. This will result in minor social impacts such as lower visual quality of the surrounding area and limited access to neighbors on the opposite side of the structure. However, roads will cross the floodway at regular intervals.

Traffic disruption caused by flooding will be minor. Therefore, business losses related to flooding will be essentially eliminated.

Harvesting of agricultural crops will be possible without delays due to flooding of fields and roads.

Health hazards caused by flooded cesspools and ponded water which quickly stagnates and becomes a thriving habitat for mosquitos will be reduced.

The construction of the floodway along the proposed alignment will not result in any unusual land value changes. A floodway has been anticipated in this general location for several years.

Cropland went out of production and decreased by 19,000 acres and urban lands increased by 24,000 acres during the period between 1963 and 1975. Land use changes show the primary trend is toward increased urban developments. The urbanization of irrigated land will continue with or without the construction of the floodway. The Soil Conservation Service does encourage the retention of prime agricultural lands. The conversion of prime agricultural lands to urban uses is stimulated by rising land prices and increased taxes on agricultural lands.

The overall per capita income, including that of minority and low income persons, will not be appreciably affected by the project.

All relocations will be accomplished under the provisions of P.L. 91-646. Relocation assistance advisory services will be provided to relocatees in securing adequate replacement housing in an ample amount of time. Multiple real estate listings indicate sufficient availability of suitable housing. The change in friends and normal activities will require adjustment on the part of individuals being moved.

The construction of the floodway will be conducted in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 CFR 15.1-15.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

FAVORABLE ENVIRONMENTAL IMPACTS

1. Provide an outlet to the Gila River for the existing and proposed flood control systems in eastern Maricopa County.
2. Provide an outlet for the storm drainage systems that may be installed upslope of the floodway.
3. Provide complete 100-year flood protection for 8,720 acres and varying degrees of flood protection for 9,500 acres of land.
4. Provide average annual damage reduction benefits of \$2,285,070.
5. Loss of life due to flooding will be decreased.
6. Help stabilize the agricultural industry in the immediate area.
7. Reduce erosion, flood plain scour, and sediment deposition in the area downslope of the floodway.
8. Increase land productivity by providing flood protection to 14,290 acres of prime and locally important farmland.
9. Create 235 man-years of employment through construction of the floodway and create an average annual employment equivalent of about three permanent jobs to operate and maintain the project.
10. Increase the amount of ground water recharge by about 1,300 acre-feet per year.
11. Improve the health, welfare, and quality of living in the project area.
12. Provide an additional amount of water to be used by natural vegetation, thus improving the quality of wildlife habitat in the Gila River from the floodway outlet to the vicinity of St. Johns Mission.
13. Acquire and manage 280 acres of land for the use of wildlife habitat. Existing habitat in this area is equivalent to about 1300 annual habitat units.
14. Reestablish wildlife habitat on 75 acres of land which would be lost to urban development without the project. The establishment of this habitat is equivalent to about 400 annual habitat units.

15. Reduce the amount of fertilizer, animal waste, and pesticide pollution flowing from the project area into the Gila River by the reduction of cropland flooding.
16. Seed to native grass species and plant shrubs and trees on 505 acres of floodway and disposal areas.
17. Provide recreation potential through multiple-use of the floodway right-of-way.
18. Conserve irrigation water by lining 1.7 miles of relocated irrigation lateral.
19. Provide for retrieval and curation of archeological artifacts that may have otherwise been lost through vandalism.

ADVERSE ENVIRONMENTAL EFFECTS

1. Annually introduce an additional 6,700 acre-feet of floodwater into the Gila River in the reach between the floodway outlet and the St. Johns Mission. With the planned project, the additional flows will cause 10,000 acres along the Gila River to be flooded more frequently. About 5,700 acres will be inundated during a flood that would occur once in 10 years.
2. Increase amount of suspended sediment reaching the Gila River, in the reach from the floodway outlet to the vicinity of St. Johns Mission, from 17 to 25 acre-feet annually.
3. Constructing the floodway will cause permanent loss of 304 acres of prime and locally important farmland, 172 acres of land having desert riparian vegetation, and 152 acres of land having desert shrub. Related construction activities will cause temporary loss of 126 acres of cultivated land, 106 acres of land having desert riparian vegetation, and 353 acres of land having desert shrub.
4. Wildlife habitat will be lost on 915 acres of desert land: 783 acres in the proposed floodway and disposal areas (505 acres of desert shrub and 278 acres of desert riparian vegetation) together with 132 acres of desert riparian vegetation in the "triangle" area on the Gila River Indian Reservation.
5. Sixteen hundred and fifty annual habitat units will be lost.
6. Landscape of the area will be altered by constructing the floodway. The floodway and spoil disposal areas will be landscaped to lessen these impacts.
7. Air and noise pollution will increase because of construction activities.
8. Traffic, utility services, and irrigation schedules will be disrupted during construction.
9. Four families and three businesses will be relocated.
10. All archeological resources within construction rights-of-way will lose in situ value through data and artifact recovery. Those resources in necessary spoil disposal and access road areas will lose in situ value through data and artifact recovery.
11. Nine hundred and forty-five acres of private land will be removed from the tax rolls.

ALTERNATIVES

ALTERNATIVE NO. 1

ACCELERATED CONSERVATION LAND TREATMENT ALONE

This alternative includes the land treatment program as described in the Planned Project section. Total installation cost is estimated to be \$2,665,000.

The Sponsors' goals for watershed protection would be met. These include:

- a. Reduction of erosion rates to an allowable limit on rangeland, cropland, and land being urbanized.
- b. Increased infiltration rates of the soils.
- c. Better agricultural water management.

This alternative would provide long term effects to areas within the project area by reducing runoff, erosion, and sediment. However, the level of protection afforded is not adequate to protect lives and property within the flood plain area. Frequent and excessive flooding causes extreme hardship upon residents in terms of fear of the potential and actual occurrence of death and destruction. The goals the local Sponsors have set for flood prevention would not be met. These include:

- a. Alleviate damage to highly productive irrigated lands.
- b. Alleviate inundation of residences, retail-commercial properties, roads, and highways.
- c. Protect existing Salt River Project and Roosevelt Water Conservation District's (RWCD) irrigation canals and on-farm irrigation facilities.
- d. Reduce flood plain scour and erosion.
- e. Protect lands now undergoing rapid urbanization.

ALTERNATIVE NO. 2

STRUCTURAL PROTECTION FOR EXISTING URBAN DEVELOPMENTS ONLY, WITH FURTHER PRODUCTIVE CROPLAND PRESERVED

This alternative would protect existing urban developments by means of structural works. Future flood damages would be reduced by prohibiting further intensive land use in the flood plain. Strict land-use zoning, purchase of development rights, and other nonstructural means would be used to prevent flood plain buildup. Implementation would be dependent upon changes in state and local laws to reduce taxes on agricultural and open space lands and to provide for public acquisition of land development rights. To prevent increases in runoff from upland areas which affect the flood plain, restrictions to further urbanization would be required.

The structural measure as included in the planned project would be installed. Environmental effects resulting from the floodway would be the same. The land treatment program would be included.

An estimated 20,800 homes and businesses subject to varying degrees of flood damage would need to be floodproofed. Restrictions to urbanization would tend to maintain the present status of urban development and would result in more than about 27,600 acres of agriculture land in "open space" in the project area than with the project plan. Productive cropland would be preserved; scenic quality would not be affected; air and water quality would be improved; energy use would be reduced; wildlife habitat would be preserved; and there would be less traffic congestion.

Ponding of floodwater at undesired locations would be increased. This could cause structural damage and vector problems which could cause residents to leave this area with these unresolved problems. The total cost of this alternative would be an estimated \$152,000,000. The effects of requiring home builders to seek other sites would be an important consideration for this alternative.

ALTERNATIVE NO. 3

PROTECTING PRIME AGRICULTURAL LAND FROM PREMATURE OR UNNECESSARY URBAN ENCROACHMENT

This alternative contains structural and nonstructural measures that would protect existing urban development in the flood plain. Purchase of development rights and other nonstructural means would be used to prevent further urban encroachment on prime irrigated land. It would allow additional urban development on other land if floodproofing and other nonstructural means are used to control flood damage.

Agriculture is important to Arizona's economy. Conversion of cropland to urban development lowers food and fiber production and changes associated air and water environmental values. The surface water rights are adjudicated to specific lands. Urban encroachment on existing croplands results in irreversible land use changes preventing food and fiber production with surface water. The loss of land suitable for crop production affects the economy locally.

There are about 70,300 acres of cropland located below the RWCD Floodway in the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds. One method of preventing irrigated cropland from being further converted to urban uses is to purchase development rights.

This alternative would include the effects of the planned project, plus the cropland below the RWCD Floodway within the project area would no longer be converted to homes, businesses, or associated uses. Open space, environmental quality, visual quality, and local economic impact of the cropland would be maintained. The purchase of development rights would shift urban development elsewhere. Urban development would also increase in areas already set aside for urban uses. This alternative would cost \$237 million.

ALTERNATIVE NO. 4

VARYING THE RWCD FLOODWAY SIZE

Alternatives were considered in an attempt to reduce the size and cost of the RWCD Floodway. One alternative studied assumed that a floodwater retarding structure on Queen Creek would be constructed. In urban and projected urban areas the floodway would be designed as in the planned project. In predominately agricultural areas, the floodway was designed to convey the planned discharge plus floodwaters resulting from a flood that would occur once in 25 years. This latter reach of floodway starts at the confluence of Queen Creek and ends at the confluence of the Gila River. Total installation of this alternative is estimated to be \$39 million. Agricultural land would be preserved in its present condition and future urban development would have to be restricted downslope from the floodway. Less native vegetation would be disturbed and wildlife habitat would be preserved. Acreage needed for disposal areas and floodway would be reduced by 100 acres. This alternative would result in protecting the area downslope of the floodway from a flood occurring once in about 56 years.

An alternative to this proposal would be not to construct a floodwater retarding structure on Queen Creek. The design of the floodway would be the same as the preceding alternative. This would result in protecting the area downslope of the floodway from a flood occurring about once in seven years. The level of protection would be consistent with present land uses. The total installation cost would be \$31 million and other effects would be the same as stated in the preceding alternative.

Construction of houses and other types of development is continuing in the area downslope of the floodway. Construction of the floodway to the proposed capacity may give landowners an added incentive to increase development because of increased protection without regard to the level of protection being afforded. Under such conditions, floodwaters exceeding the planned capacity may cause increased damages.

The lower level of flood protection afforded could adversely affect residents. Initially the benefits derived could justify the cost. However, as development takes place, this would change.

ALTERNATIVE NO. 5

NO PROJECT

This alternative includes the ongoing land treatment program. The land treatment program continues to improve because technology, land use, and land ownership change. The Soil Conservation Service, through the Natural Resource Conservation Districts, will continue to provide technical assistance for installation of this program.

Land use projections for the "No Project" alternative are the same as for the planned project. As desert land and cropland are taken for urban development, the following impacts can be expected: increase in floodwater runoff; loss of productive cropland; loss in scenic quality; reduced air and water quality; more energy use; loss in wildlife habitat; and more traffic congestion.

Officials of the community recognize that a flood problem exists. Flood insurance is available. With or without this project, a flood plain management program will be developed. The flood plain management program will encompass proper land-use planning, protective measures for existing developments, and land-use regulations.

Specific flood hazard areas will be identified through detailed flood plain information studies. Common recognition of these hazards will be the key to the action program for flood plain management that will follow.

The first item in the action program is adjustments in existing structures and occupancy in the identified flood hazard areas. Because of characteristics of the flood plain, the studies may show that most present development is in a flood hazard area. From studies of aerial photographs, it is estimated that there are 22,000 existing home or commercial establishments that would need to be floodproofed. A preliminary cost estimate to floodproof these establishments is \$70,400,000.

Flood plain land use will be controlled through the following: zoning ordinances; subdivision regulations, including utility extensions; building codes; acquisition and evacuation; building financing and related tax assessment adjustments; flood hazard warning signs and notices; and flood insurance. The regulations will have two purposes. One is to maintain adequate floodways that have sufficient cross-section area for passing a specified flood flow through the developed areas without damage. The second is to regulate development of the flood plain to prevent damages to future development.

The same type of flood plain management program will be required for both "no project" and "with project" conditions. The difference being the size of the flood plain, the number of establishments requiring floodproofing, and the size of the floodways for internal drainage of present and projected development.

An outlet to the Gila River will need to be provided in the future for the internal drainage system downslope of the RWCD Floodway. Studies to date have assumed that the RWCD Floodway would be installed. If the floodway is not installed, an outlet would need to be substantially longer and larger in size.

The existing floodway would continue to collect floodwater and divert flows to the Gila River Indian Reservation. The Gila River Indian Community would like to avoid further damage to their crops, land, and property. The tribe believes the floodway flows and water from Queen Creek were illegally diverted. If the RWCD Floodway is not constructed, the tribe has indicated that legal action will be initiated.

Under the "no project" alternative, a total of 3,520 acre-feet of sediment would move downstream and cause damage to roads, bridges, irrigation facilities, urban developments, crops, and other properties over the next 100 years. Periodic floodwater and erosion damage, consisting of scour damage to cropland and other unprotected land, would occur. The proposed floodwater structures in the Lower Queen Creek Watershed would be jeopardized because of not having an adequate outlet.

On an average annual basis, the RWCD Floodway would provide estimated benefits of \$2,285,070, while costs would be \$1,092,220. The net monetary benefits foregone by not implementing this structural measure as part of the interdependent system of flood prevention measures of the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds is estimated to be \$1,192,850 annually.

SHORT-TERM VS. LONG-TERM USE OF RESOURCES

Use of land for project measures will not significantly restrict future options or limit productivity. The floodway and wildlife mitigation area will preclude full optional use of 0.4 percent of the project area. Opportunities for productive use will be maintained or enhanced on the remaining 99.6 percent.

This project fits within the framework of the Type I River Basin Report for the Lower Colorado Region. This project will help alleviate problems related to flooding, sediment, and erosion.

Land use projections indicate urban development will occur with or without a project. If a project of flood plain management and flood protection is not undertaken in the near future, land and water resource problems will increase.

The plan provides an adequate outlet for flood flows to the Gila River. Upslope of the floodway internal drainage systems could then be installed in present and projected urban areas to provide the level of protection consistent with the needs and anticipated use of the flood-prone area. The plan will aid in orderly development of natural resources of the area using conservation and environmental measures to maintain the usefulness of the lands for future generations.

Land treatment measures and the floodway will continue to be effective as long as they are properly maintained.

The study area comprises about 1.0 percent of the total area of the Gila Subregion within the Lower Colorado Region in Arizona. Five P.L. 566 watershed projects have been completely installed, and eight P.L. 566 watershed projects are being installed in the Subregion. Three other projects have been approved for planning. Thirty-six additional watersheds in the Subregion have been identified as having development potential. 22/ The table on the next page lists pertinent information for watersheds in the Subregion.

Status of the P.L. 566 Watersheds in the Gila Subregion

<u>Installation Completed</u>	<u>Dams No.</u>	<u>Drainage Area Controlled Sq. Mi.</u>	<u>Sediment Storage Ac. Ft.</u>	<u>Floodwater Storage Ac. Ft.</u>	<u>Channel Improvement Mi.</u>
Florence	1	63.4	755	4,060	1
Frye Creek-Stockton	5	203	2,800	7,500	14
Magma	1	62	160	4,850	11
White Tanks	2	34	170	3,520	11
Vanar	0	0	0	0	6
Arroyos No. 1	<u>12</u>	<u>29</u>	<u>420</u>	<u>1,400</u>	<u>1</u>
Subtotal	<u>21</u>	<u>391.4</u>	<u>4,305</u>	<u>21,330</u>	<u>37</u>
<u>Authorized for Installation</u>					
Buckhorn-Mesa	5	42.5	825	3,551	7
Wickenburg	2	1.9	26	274	0
Apache Junction-Gilbert	1	49.9	175	3,960	15
Williams-Chandler	2	109.1	380	7,700	9
Guadalupe	1	1.9	25	265	0
Buckeye	3	88.9	2,310	8,000	3.5
Perilla Mountain	2	32.8	330	3,018	6.5
Harquahala Valley	<u>3</u>	<u>136.7</u>	<u>925</u>	<u>8,707</u>	<u>15.0</u>
Subtotal	<u>19</u>	<u>463.7</u>	<u>4,996</u>	<u>35,475</u>	<u>56</u>
Total	40	855.1	9,301	56,805	93

Authorized for Planning

Location

Dos Cabezas	Cochise County
Eagle Tail	Maricopa County
Lower Queen Creek	Maricopa and Pinal Counties

The project is not designed to correct land and water resource use problems on a short-term or immediate basis, but for a 100-year period.

The project is expected to be effective in conserving land and water resources long after its designed life. The degree of flood prevention will remain high if land use changes have been projected correctly. Sediment control will continue long after the designed life of the structures, especially if hydrologic conditions are improved beyond those proposed in this project or if sediment is removed.

Individually, the effects of the P.L. 566 watershed projects on the main stem of the Gila River will be very difficult to assess. Taken collectively, the 40 floodwater retarding structures proposed or installed in the 14 P.L. 566 watershed projects will control a drainage area of 855 square miles. This is about 1.5 percent of the total Gila River drainage area. About 625 square miles of the controlled drainage area are located above the junction of the Santa Cruz River and the Gila River. In other words, the P.L. 566 projects will control 2.2 percent of the drainage area above this junction. Structures in these projects call for 9,301 acre-feet of sediment storage and 56,805 acre-feet of floodwater detention storage. Over 48 miles of floodways have been installed and 45 miles are planned for construction.

Storage provided in these dams for floodwater detention amounts to about 1.25 inches of runoff per acre controlled. Hydrologic studies of large drainage areas indicate that this type of structure will influence peak flow in the main channel generally in direct proportion to the percent of the total drainage area controlled. This will indicate a total reduction of about two percent in peak flows in the Gila River immediately below its confluence with the Santa Cruz River and a one and one-half percent decrease in peak flows for the total drainage area of the Gila River.

Works of improvement in this project are complementary to those in other water resource projects in the Gila Subregion. The Corps of Engineers has a system of floodwater retarding structures and channels either planned or installed to give flood protection to portions of the Phoenix metropolitan area. The Bureau of Reclamation, as part of the Central Arizona Project, plans to build the Orme Dam or a suitable alternative. A system of floodwater retarding structures to protect the CAP aqueduct across the Paradise Valley area is constructed. At the same time, these structures will be protecting developments downslope. Floodwater retarding structures in the three projects associated with the RWCD Floodway will supplement protection provided by the Corps of Engineers and the Bureau of Reclamation projects by giving additional protection to those developments in the eastern part of the Phoenix metropolitan area.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Committed to the floodway, disposal areas, and mitigation area will be 430 acres of cropland, 558 acres of desert riparian vegetation, and 505 acres of desert shrub vegetation. The areas devoted to the floodway and wildlife mitigation will be essentially irreversibly committed as long as the structures are used.

The commitment of the land and water resources described above does not preclude the physical use of the resources for other purposes.

Labor required for construction and maintenance of the measures will be irretrievably committed.

The recovery of archeological resources will be done by professional archeologists. The curation will be determined by the landowner in consultation with the State Historic Preservation Officer and the Interagency Archeological Services of the Heritage Conservation and Recreation Service.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

GENERAL

Consultation with individuals, groups, and governmental bodies has been a continuing part of developing this plan since interest began in 1960. Field surveys were made throughout the study area. Permission to trespass for the field survey was obtained from each landowner; at that time the reason for the survey was explained. In addition to the landowners, the following people, firms, and agencies were among those consulted during the planning process:

Heritage Conservation and Recreation Service - Interagency Archeological Services; U. S. Army Corps of Engineers, Los Angeles District; U. S. Fish and Wildlife Service; U. S. Forest Service; U. S. Bureau of Reclamation; U. S. Bureau of Land Management; U. S. Bureau of Indian Affairs; U. S. Department of Health, Education and Welfare; U. S. Bureau of Mines; U. S. Geological Survey; National Park Service; Arizona State Land Department; Arizona Water Commission; Arizona Game and Fish Department; Arizona Department of Transportation; Maricopa County Parks and Recreation Department; Maricopa County Planning and Zoning Department; Maricopa Association of Governments; Arizona Office of Economic Planning and Development; Arizona Bureau of Mines; Arizona Department of Health Services; City of Mesa; City of Gilbert; Unincorporated town of Apache Junction; East Mesa Area Development Association; Maricopa County Board of Supervisors; Maricopa County Highway Department; Board of Supervisors of Pinal County; East Maricopa Natural Resource Conservation District; and the Roosevelt Water Conservation District.

Between 1960 and the present, numerous news articles and pictures have appeared in local papers relating to activities and information concerning the project. Letters have been written to federal, state, county, and city officials, as well as local organizations and individuals, in an effort to provide ample opportunities for the general public to participate in the planning process. Television interviews have been conducted explaining to the general public of Arizona the project.

There has been a resurgence of consultation with individuals, groups, and governmental bodies since the National Environmental Policy Act of 1969 became effective.

Numerous meetings have been held with the Sponsors; State Game and Fish Department; U. S. Fish and Wildlife Service; city mayors; city, county, and regional planning groups; environmental and sportsmen groups and individuals; as well as industrial people, in regard to land use policy and environmental considerations.

Discussion and Disposition of Each Comment on Draft
Environmental Impact Statement

Letters of comment concerning the draft environmental impact statement were requested from each of the following departments, agencies, organizations, groups, and individuals:

<u>Federal Government</u>	<u>Responded</u>
Department of Agriculture	
Office of the Secretary	Yes
Agricultural Research Service	
Phoenix, Arizona	No
Agricultural Stabilization and Conservation Service	
Phoenix, Arizona	No
Economic Research Service	
Berkeley, California	No
Farmers Home Administration	
Phoenix, Arizona	No
 Department of the Air Force	
Williams Air Force Base, Arizona	Yes
 Department of the Army	
Assistant Secretary of the Army (Civil Works)	No
Assistant Chief, Planning Division, Corps of Engineers, San Francisco, California	No
District Engineer, Corps of Engineers, Los Angeles, California	Yes
Study Manager, Phoenix Urban Study, Corps of Engineers, Phoenix, Arizona	No
 Department of Commerce	
Deputy Assistant Secretary for Environmental Affairs	No
 Department of Health, Education, and Welfare	
Assistant Secretary for Administration and Management	No
Director, Office of Environmental Affairs	
Regional Environmental Officer, San Francisco, California	No

Federal Government (Cont'd)Responded

Department of Housing and Urban Development	
Director, Federal Housing Administration	
Director, Area Office, Los Angeles, CA	
Director, Federal Housing Administration,	
Phoenix, Arizona	No
Department of the Interior	
Office of the Secretary	Yes
Office of Environmental Project Review	No
Regional Director, Fish and Wildlife Service	
Albuquerque, New Mexico	No
Field Supervisor, Fish and Wildlife Service	
Phoenix, Arizona	No
District Chief, Water Resource Division,	
U. S. Geological Survey,	
Tucson, Arizona	No
Area Director, Bureau of Indian Affairs,	
Phoenix, Arizona	No
Land Operations Office, Bureau of Indian	
Affairs, Sacaton, Arizona	No
State Director, Bureau of Land Management	
Phoenix, Arizona	No
District Manager, Bureau of Land Management	
Phoenix, Arizona	Yes
Chief, Bureau of Mines	
Denver, Colorado	No
Regional Director, Pacific Southwest	
Bureau of Outdoor Recreation,	
San Francisco, California	No
Regional Director, National Park Service,	
San Francisco, California	No
General Superintendent, National Park Service,	
Phoenix, Arizona	No
Western Archeological Center	
Tucson, Arizona	No
Regional Director, Bureau of Reclamation	
Boulder City, Nevada	No
Project Manager, Bureau of Reclamation,	
Phoenix, Arizona	No
Department of Transportation	
Deputy Chief, Office of Marine Environment	
and Systems	No
Environmental Protection Agency	
Administrator	No
Regional Administrator, Region IX	
San Francisco, California	Yes
Chairman, Federal Power Commission	No

Federal Government (Cont'd)Responded

Advisory Council on Historic Preservation Assistant Director, Office of Review and Compliance	Yes
Federal Highway Administration Division Engineer Phoenix, Arizona	No
Council on Environmental Quality	No

State and Local Government

Governor of Arizona	Yes
Arizona Bureau of Geology and Mineral Technology	Yes
Arizona Commission of Agriculture and Horticulture	Yes
Arizona Department of Health Services	Yes
Arizona Department of Public Safety	Yes
Arizona Department of Transportation	Yes
Arizona Game and Fish Department	Yes
Arizona Historical Preservation Officer	Yes
Arizona Office of Economic Planning and Development	Yes
Arizona Power Authority	Yes
Arizona State Land Department	Yes
Arizona State Museum	Yes
Arizona State Parks	
Natural and Cultural Resource Conservation Section	Yes
Arizona State Parks Board	Yes
Arizona Water Commission	Yes
Center for Public Affairs, Arizona State University	Yes
Central Arizona Association of Governments	Yes
Council for Environmental Studies, University of Arizona	Yes
Department of Anthropology, Arizona State University	No
Indian Affairs Commission	Yes
Maricopa Association of Governments	Yes
Mineral Resources Department	Yes
Prescott Historical Society	Yes
Governor's Commission on Arizona Environment	No
City of Chandler	Yes
City of Gilbert	No
City of Mesa	No
Flood Control District of Maricopa County	Yes
Maricopa County Board of Supervisors	No
Maricopa County Highway Department	Yes
Maricopa County Parks and Recreation Department	Yes
Maricopa County Manager	No
Maricopa County Planning Department	Yes
Pinal County Board of Supervisors	No
Pinal County Highway Department	Yes

Other GroupsResponded

American Telephone and Telegraph	No
Arizona Conservation Council	No
Arizona Public Service Company	Yes
Arizona State Reclamation Association	No
Arizona Water Resources Committee	No
Arizona Wildlife Federation	No
East Maricopa Natural Resource Conservation District	Yes
El Paso Natural Gas Company	No
Environmental Defense Fund	No
Environmental Impact Assessment Project	No
Friends of the Earth, Washington	No
Friends of the Earth, Arizona	No
General Motors Proving Ground	No
Gila River Indian Community, Governor	No
Gila River Indian Community, Natural Resources Committee	Yes
L. H. Bell and Associates	No
League of Women Voters of Arizona	No
Maricopa Audubon Society	No
Mountain Bell Telephone Company	No
National Audubon Society	No
National Wildlife Federation	No
Natural Resources Defense Council	No
Phoenix Historical Society Museum	No
Roosevelt Water Conservation District	No
Salt River Project	Yes
Sierra Club	No
Southern Pacific Transportation Company	Yes

Individuals

Ms. Sharon M. Strube	No
Mr. W. Dallas Brooks	No
Ms. Gina Blodgett	No
Mr. James A. Blasdel	Yes

The following are replies to comments concerning the interagency draft Environmental Impact Statement.

Departments and Agencies of the
Federal Government

United States Department of Agriculture - Office of the Secretary
(Letter of September 7, 1977)

1. Comment: Census data reveals a minority population of 18.7 percent in Maricopa County and 48.5 percent in Pinal County.

Response: The Present and Projected Population section has been expanded to give more detail on this subject.

2. Comment: Based on the information included in the EIS, it is difficult to determine if the proposed project will affect the civil rights of the concerned minorities, either positively or negatively.

Response: The Economic and Social section has been amended to show response to this comment.

3. Comment: We recommend that you include in your final statement a more detailed assessment of the effects the project will have on the minority population. This should be accomplished in accordance with Soil Conservation Service guidelines for preparing environmental impact statements (Federal Register, Vol. 39, No. 107, June 3, 1974).

Response: Additional information has been added to the Environmental Impact section addressing the effects of the project on minority population. The effects of this project on people is shown throughout this Environmental Impact Statement. There is no concerted effort to single out the effects this project has on just minority populations.

Department of the Air Force - Williams Air Force Base
(Letter of September 23, 1977)

No response necessary.

Department of the Army - Los Angeles District, Corps of Engineers
(Letter of September 9, 1977)

1. Comment: Page 45, 7th paragraph: Delete the last sentence and insert the following: This study concludes that no

Corps of Engineers flood control improvements west and downslope of the Roosevelt Water Conservation District Floodway are justified at this time. The results of this study are summarized in the "Summary Report for Flood Control - Gila Floodway" due for public distribution in September 1977.

Response: Comment complied with.

2. Comment: Appendix A: The discount rate used should be referenced.

Response: The interest rate is 2-7/8 percent. As stated in paragraph 3a(1) of Watershed Memorandum 92 (Rev. 4) Soil Conservation Service policy is to use the interest rate as shown in the original plan.

United States Department of the Interior
(Letter of November 2, 1977)

1. Comment: The draft environmental impact statement does not adequately address the subject of recreation and its impacts on the proposed floodway. The discussion in the Recreational Resources section should identify parklands which would actually be affected by project implementation. If no parklands are involved, then the draft statement should say that none are involved. From a recreation standpoint, the channel right-of-way could provide a significant length of bike and riding trails. The disposal areas, once vegetated, could provide space for such facilities as picnic grounds, parcourses or adventure play areas. The statement should discuss these opportunities and assess the impacts of including recreation development alternatives.

Response: The Recreational Resources section identifies recreational areas within the project area. A statement has been added in the Environmental Impact section that states there are no impacts to known recreational areas.

In the reaches where the floodway traverses urbanized and projected urbanized areas, it is proposed that the maintenance roads be paved. These roads can serve as bike and hiking paths. Because of increased maintenance problems associated with motorized vehicles it is not desirable to allow them to travel for long distances on the bottom of the floodway.

Response: It is recognized that one way to maximize the utilization of floodway areas and spoil disposal areas is to develop them to accomodate park-like activities. To accomplish this specific objective will require that a group of interested citizens work with a sponsor, such as the Maricopa County Parks and Recreation Department, who can obligate monies for recreational purposes. They, together with the Soil Conservation Service can develop a recreational parks plan and implement it. If a plan is developed, then the related impacts will be determined.

2. Comment: The fact that impacts are not quantified in the alternative discussion makes it difficult to compare alternatives. In addition, there is no discussion of impacts on prime farmland.

Response: Impacts resulting from specific alternatives are, in general, quantified in the Environmental Impact section. Statements in the Environmental Impact section have been included to clearly show that prime agricultural land will be impacted.

3. Comment: According to the referenced 1975 report, efforts have been made to mitigate damage to archeological remains along portions of the proposed floodway right-of-way. These measures included recovery of significant archeological remains at several of the cultural resource sites recommended for inclusion in the National Register of Historic Places. The mitigation program was not discussed in the draft statement, nor was it developed in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, although a statement on page 43 indicated that such consultation would take place.

Response: Reference is made to the following letter of response from Thomas G. Rockenbaugh to Larry E. Meierotto, dated December 8, 1977, which follows.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

3008 Federal Building, Phoenix, Arizona 85025

December 8, 1977

Mr. Larry E. Meierotto
Deputy Assistant Secretary
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Meierotto:

Thank you for your letter of November 2, 1977 (PEP ER- 77/774) transmitting official USDI comments for the Roosevelt Water Conservation District Floodway project draft environmental statement.

Two of the comments though, cause us some concern and we feel that a direct reply to you is in order.

The first comment is found on page two, first paragraph. The statement refers to lack of consultation during development of the "mitigation program." The commentator should be made aware that our records show that the referenced report (An Archeological Investigation of the Queen Creek Project by Danny Brooks) was the culmination of a series of investigations initiated by the National Park Service at the request of the Bureau of Indian Affairs. The comment carries the implication that SCS caused the mitigation effort without regard to the National Historic Preservation Act of 1966 or other laws, rules or regulations in force during the period 1971-1975 which is an unfair distortion of fact. Furthermore, the referenced statement indicating "that such consultation would take place" is taken out of context. The statement reads, "The archeological mitigation plan to be written for this project will include all known archeological sites that might be impacted" (emphasis added).

The fact that the mitigation program was not discussed in the statement is undisputed. We were not apprised of an impending mitigation effort, per se. Neither were we provided complete copies of any of the archeological investigation reports conducted prior to Brooks' report, although we have managed to obtain site descriptions and mitigation recommendations from the latter report. However, the excerpted material was provided with the understanding that the report is still not in final form and acceptance by NPS-IAS is pending.

The second comment that concerns us is the third one on page 3. It would appear from the comment that the commentator has neither taken advantage of the interagency planning process nor communicated with SCS or Fish and Wildlife Service personnel in Phoenix. The comment



is particularly disappointing because in August of this year members of my staff met with a field representative of U.S. Fish and Wildlife Service and a representative of Arizona Game and Fish Department to candidly discuss the wildlife habitat mitigation proposal. The meeting in essence, covered every point set forth in the comment.

The Wildlife Habitat Measures subsection of the draft statement discussed the "triangle" area habitat in terms of "habitat units" rather than acres. Impacts and mitigation were based on an interagency biology team report and were determined in terms of habitat units as set forth in that report, taking into account land use projections as planned by the Gila River Indian Community. This was discussed extensively in the meeting. The U.S.F.W.S. representative indicated that the habitat units seemed reasonable and foresaw no problem with his agency accepting the plan. The Arizona Game and Fish representative reserved comment until he could study the supporting data more closely. The USDI comment is a complete reversal from the position taken by its knowledgeable representative in the meeting, yet the backup data has not changed and the Gila River Indian Community is still intent on development in the "triangle", with or without the floodway.

We recently hosted a meeting in Phoenix to discuss archeological work remaining to be done for the entire project. Interagency Archeological Services (NPS) was represented by Garland J. Gordon whose expertise and candor contributed immensely to a successful interagency meeting--a meeting that yielded positive results. We feel assured that future dealings with IAS will result in decisions and agreements that we can rely on during our environmental assessment and project planning processes.

It seems obvious by the comments received that we are not, in all cases, dealing with the proper echelon with certain U.S.D.I. Agencies. We would like to have your advice on whom within USDI we should involve so that futile meetings such as was held on the habitat mitigation can be avoided in the future and comments such as were made on archeology can be taken care of during the preliminary draft stage of the EIS.

Sincerely,



For

Thomas G. Rockenbaugh
State Conservationist

Response: The Office of Cultural Resource Management, Arizona State University is in the process of developing a comprehensive archeological resource management program for this project. Pursuant to Title 7 CFR Part 656, the program is being developed in consultation with the State Historic Preservation Officer, National Park Service - Interagency Archeological Services and Western Archeological Center (NPS). The Advisory Council on Historic Preservation will be consulted at the appropriate time.

4. Comment: Page 16: The fourth paragraph states that the excavated material from the floodway which cannot be put to a useful purpose will be placed in designated disposal areas. We feel that final selection of these disposal areas should be made in the field by a team composed of members from the Arizona Game and Fish Department, Soil Conservation Service and U.S. Fish and Wildlife Service.

Response: A team composed of members from the Arizona Game and Fish Department, U.S. Fish and Wildlife Service, and Soil Conservation Service initially made an inventory of wildlife habitat in the areas to be used for construction. If it is found that alternate areas are required, then a new inventory can be made by representatives of the above named agencies.

5. Comment: Page 19, Paragraph 4: There should be a discussion of the Agency which will manage the 280 acres of replacement lands.

Response: This topic is discussed in the Operation and Maintenance section.

6. Comment: Page 19, Operation and Maintenance: A statement should be made to the effect that the 75-acre wildlife mitigation area upslope of the collector ditch within the floodway right-of-way be maintained without degradation from vandalism or other uses that would lower the carrying capacity of the area for wildlife.

Response: As stated in the Operation and Maintenance section, the design and construction of the floodway will take into consideration features to minimize vandalism.

7. Comment: Page 20: The management of the mitigation area by the Arizona Game and Fish Department must be spelled out in a general agreement, and not a general plan. The Fish and Wildlife Coordination Act states that a general plan is only used when Federal government land is involved.

Response: Appropriate change made.

8. Comment: Page 41: It is stated on page 41 that the other seven cultural resources, not recommended for inclusion in the National Register of Historic Places, are described as being significant. Possessing significant information, however, is one of the broad criteria under which properties may be eligible for inclusion. Although data recovery has already been conducted, the resources should be further evaluated, and the final statement should contain documentation that the State Historic Preservation Officer concurs with the determination.

Response: The State Historic Preservation Officer has determined that the project lies within an archeological district which is eligible for nomination to the National Register of Historic Places. The Archeological and Historical Resources section has been rewritten to reflect a proposed cultural resource management plan for the project.

9. Comment: Pages 42 and 43: In the survey report on proposed disposal areas (reference 15), it is stated that at parcels 11 and 12 significant cultural remains were located. It was suggested by the archeologist that alternative disposal locations be sought. We concur with this recommendation that, if possible, significant cultural resources should be avoided and alternative disposal areas be avoided and alternative disposal areas be considered.

Response: The Soil Conservation Service agrees that, if possible, significant cultural resources will be avoided.

10. Comment: Page 45: The Central Arizona Project will convey an average annual supply of 1.2 million acre-feet of water to central Arizona.

Response: Appropriate change made.

11. Comment: Page 58: The narrative in this section and throughout the entire statement on the "triangle" area is very superficial. A full and complete discussion of the vegetation on the triangle should be given, including total acres of each habitat type. Also, an explanation of why only 132 acres of riparian habitat are identified as being adversely affected and requiring mitigation when, in fact, a total of about 1,300 acres will be lost or degraded. The discussion should also include a description of present land use and future planning of the Gila River Indian Community for the triangle.

Response: In the sections entitled Wildlife Habitat Measures, Plant and Animal Resource, and Environmental Impact-Structural Measures can be found information relating to the "triangle".

Response: Information relating to land use projections indicates that in the near future about 50 percent of the total undeveloped area of 2,150 acres will be developed to agriculture with or without the construction of the floodway. It was further indicated that over a 25 year period the remaining undeveloped area will be converted to agricultural use. These land use projections and vegetative inventories were used to calculate that 79 acres of land, which has a medium density stand of mesquite and desertbroom, and that 53 acres of land, which has a dense stand of mesquite, desertbroom, quailbush, and grasses, would be lost. Thus, the acreage of riparian vegetation within this area is estimated to be 132 acres.

12. Comment: Page 61: In a discussion of probable impacts, it is stated that 14 cultural resources were identified and "items of significance will be salvaged before and during construction." In order to avoid undue project delays, data recovery should be conducted prior to initiation of construction activity. Additionally, the section dealing with environmental impacts in the final statement should also discuss cultural resources that were located in the disposal areas.

Response: It is agreed that data recovery should be conducted prior to construction whenever possible. It is a recognized possibility that artifacts might be encountered in tested areas during construction. Therefore, an on-call archeologist will be utilized for sites that require monitoring during construction.

Information relating to cultural resources located in the disposal areas has been added to the sections entitled Archeological and Historical, Resources and Environmental Impact - Structural Measures.

13. Comment: Page 75: Reference No. 11 should read "Endangered and Threatened Wildlife of the United States."

Response: Appropriate change made.

United States Department of the Interior - Bureau of Land Management
(Letter of October 12, 1977)

1. Comment: Page 18, paragraph 3: Does not state whether intensive surveys have been performed. What are "archaeological reconnaissance surveys"?

Response: Archeological reconnaissance surveys are investigations conducted by professional archeologists for the purposes of locating, testing, and determining relative importance of archeological resources that may be affected by Soil Conservation Service assisted actions. Results of reconnaissance surveys are used in making project decisions and determining the need for detailed survey, recovery, protection and/or preservation of cultural resources prior to construction activities.

2. Comment: Page 19, paragraph 2: Indicates 410 acres and 1,650 annual habitat units will be lost. These losses are not shown as such on page 64.

Response: The fact that 410 acres of desert riparian vegetation will be lost has been clarified. The Adverse Environmental Effects section has been expanded to include the fact that 1,650 annual habitat units will be lost. Also, the Favorable Environmental Impacts section has been expanded to show that about 1700 annual habitat units have been made available by the purchase of 280 acres of land and the planting of 75 acres of desert riparian vegetation in the floodway right-of-way.

3. Comment: Page 41, last paragraph: What are "negative archaeological remains"?

Response: The phrase "negative archaeological remains" is quoted from a published archeological reconnaissance survey of a portion of the floodway right-of-way and means that the author encountered no archeological resources within the area surveyed.

4. Comment: Pages 65-69, under "Alternatives": The archeological/cultural impacts are not carried through alternatives.

Response: Alternative No. 1 includes the land treatment program as described in the Planned Project section. As described, this program applies to the privately owned farmland. No archeological resources have been identified as being subject to impact under this alternative. However, should these resources be found, the Soil Conservation Service will advise the Secretary of the Interior and recommend that the landowner notify the State Historic Preservation Officer prior to installing the conservation measure. On privately owned farmland the disposition of archeological resources will be decided by the landowner. Alternatives No. 2, No. 3, and No. 4 state that environ-

Response: mental effects would be the same as included in the
(cont'd) planned project. If there is no project, as Alternative
No. 5 suggests, then it can be concluded there are no
impacts.

5. Comment: Page 70, under "Short Term vs. Long Term Use", first
paragraph: The 0.4 percent should be clarified on how
it was derived.

Response: There are 711 square miles (455,040 acres) of drainage
area above the proposed RWCD Floodway - this information
is found in the Introduction section. There are 1,697
acres of land needed for total project (1,417 acres of
land being disturbed resulting from project installation
plus 280 acres of land needed for mitigation purposes).
From this information 0.4 percent can be derived.

6. Comment: Page 73, under "Commitment of Resources": There is no
mention of the archeological resources.

Response: An additional statement related to archeological resources
has been included in the Irreversible and Irretrievable
Commitments of Resources section.

United States Environmental Protection Agency - Region IX
(Letter of October 14, 1977)

1. Comment: The draft environmental statement has been classified
as Category LO-2, by the Environmental Protection
Agency.

Response: Noted.

2. Comment: The FEIS should be coordinated and comments elicited
from both the on-going Maricopa Association of Govern-
ments and Central Arizona Association of Governments'
208 Water Quality Management Plan studies.

Response: A copy of the draft Environmental Impact Statement was
sent to both the Maricopa Association of Governments
and the Central Arizona Association of Governments.
Their responses have been included in this final En-
vironmental Impact Statement.

The Soil Conservation Service is working and will con-
tinue to work closely with the State's 208 Water
Quality Program.

3. Comment: It should be noted that population projections are currently available for the communities within the Phoenix Metropolitan area and the unincorporated community of Apache Junction from these studies.

Response: As stated, in the Present and Projected Population section, population projections made by the Maricopa Association of Governments and the Pinal County Planning and Zoning Department have been used.

4. Comment: Please indicate the time frame for construction of the proposed Queen Creek project, as the DEIS has stated that the proposed floodway would be subject to flooding by the 30-year flood without this project.

Response: It is projected that construction of the Queen Creek floodwater retarding structure will commence in calendar year 1981. It is also projected that the reach of floodway which outlets Queen Creek will be under construction during this period.

5. Comment: What is the status of the Gila Floodway Survey Report by the U.S. Army Corps of Engineers that was due for completion by August 1977? The relevant portions of this report should be incorporated into the FEIS.

Response: The "Summary Report for Flood Control-Gila Floodway" has been obtained and relevant portions of this report have been incorporated into the final Environmental Impact Statement.

6. Comment: The reference to urban sewage being "normally put in individual septic tanks" is inaccurate. Williams AFB, Chandler, Gilbert, and Mesa all have sewage treatment plants. The FEIS should correct these errors.

Response: The above information has been included.

7. Comment: Diverting floodwaters from the flood-prone areas to the proposed RWCD Floodway will increase groundwater recharge by 1,300 acre-feet per year. How will this affect groundwater recharge, percolation rates, and the diminishing water supply in the flood-prone areas?

Response: Precipitation falling on the floodplain generally evaporates, runs off, or is used by plants. Only about one percent of the total precipitation is estimated to

Response: recharge the groundwater basins. Analysis of river (cont'd) channel losses in the Gila River indicates high recharge potential. Diverting floodwater to the Gila River will allow a greater portion of the runoff to recharge the groundwater basin. However, the effects of the project will be minimal.

8. Comment: There will be increased flow, bedload, and suspended sediment transported to the Gila River due to construction of the proposed project. Sediment in suspension transported to the Gila River will increase by approximately 50 percent due to the project.

Response: The peak discharge from the RWCD Floodway will be greatly reduced by Gila River channel storage and transmission losses within the Gila River channel and flood plain. The result will be that the peak flow for any given discharge reaching the vicinity of St. Johns Mission, the present outflow point, will be about the same as that now experienced.

After installation of the RWCD Floodway, bedload sediment deposition will occur mainly in the floodway sediment traps and in the floodway. The amount of bedload deposited will be about the same as at present (10 acre-feet annually).

The suspended sediment transported or deposited can be seen in the following table.

Suspended Sediment - Acre-Feet

<u>Condition</u>	Transported Overland To Gila River In Vicinity of St. Johns Mission	Deposited Downstream from the Existing Floodway	Transported To Gila River At Proposed RWCD Floodway Outlet	Transported By Gila River To Vicinity of St. Johns Mission
Present	17	7	0	95
With Project	<u>0</u>	<u>0</u>	<u>25</u>	<u>103</u>
Change	-17	-7	+25	+8

9. Comment: There will be associated increases in pesticides and nutrient loading from fertilizers and animal wastes due to the project.

Response: The floodway will reduce the frequency and amount of flooding on agricultural lands downslope of the floodway. Thus the amounts of nutrients from fertilizers and animal wastes and pesticides applied to crops and livestock carried by floodwaters to the Gila River will be reduced.

10. Comment: The present beneficial uses of the Gila River and the impacts associated with construction of the RWCD Floodway needs to be assessed in the FEIS.

Response: The primary use of the Gila River is to convey floodwater and irrigation tailwater downstream. Analysis of river channel losses in the Gila River indicates high recharge potential. The channel banks are lined with desert riparian vegetation consisting principally of mesquite, saltcedar, desertbroom, seepwillow, quailbush, and grasses.

Constructing the floodway and outletting floodwater into the River will provide an increased reach of riverbed to be used as a recharge basin and, also, to supply supplemental water to be used by riparian type vegetation.

11. Comment: Impacts of uncontrolled floodwaters to the Gila River now versus the proposed RWCD Floodway conveyance of floodwaters to the river needs to be discussed in the FEIS.

Response: Discussions of how the proposed RWCD Floodway impacts the project area and the Gila River can be found in the final Environmental Impact Statement in sections entitled Planned Project and Environmental Impact.

12. Comment: The proposed RWCD Floodway is referenced throughout the DEIS in the present tense. This has led to much confusion in distinguishing present flood retarding structures from the proposed project while reviewing the DEIS.

Also, is there an existing floodway? How does the existing floodway and the existing irrigation canal relate to construction of the new floodway? This is particularly significant if the proposed floodway is to run an almost parallel course with the existing canal and floodway.

Response: This program environmental impact statement is being written for only the enlargement and extension of the RWCD Floodway. The northern end of the floodway starts about 230 feet north of Brown Road. From this point, the floodway flows south and follows the alignment of the present manmade floodway and parallels the RWCD Irrigation Canal for a distance of 18.23 miles. From this point, the remaining 9.13 miles of floodway will be re-aligned and will end east of Gila Butte at the Gila River. The location of this floodway can be seen on the Project Map in Appendix B.

13. Comment: The project financing needs clarification as total project costs have been stated as \$29,841,300 with \$17,704,300 from P.L. 566 funds and \$6,220,500 from "other funds." What is the source of these "other funds"? Also, \$5,916,500 remains to be funded. How will this amount be financed?

Response: The source of other funds for this project are the Flood Control District of Maricopa County and the National Parks Service. As is stated in the Project Cost section \$23,620,800 is a P.L. 566 cost. Project construction cost for the floodway is estimated to be \$17,704,300. This cost will be borne from P.L. 566 funds also. If it is correctly assumed that the \$5,916,500 was derived by subtracting \$17,704,300 (P.L. 566 funds) from \$23,620,800 (P.L. 566 funds) then it is also P.L. 566 funds.

14. Comment: The DEIS has not adequately discussed land use changes due to construction of the RWCD Floodway. For example, will the project encourage further conversion of prime agricultural lands to urbanized uses?

Response: The Soil Conservation Service does encourage the retention of prime agricultural lands. The conversion of prime agricultural lands to urban uses is stimulated by rising land prices and increased taxes on agricultural lands. The land use change from prime agricultural land to urban land will occur without project action.

15. Comment: Will there be related air quality impacts due to urbanization?

Response: The urbanization of irrigated land will continue with or without the construction of the floodway. Therefore,

Response: no adverse impact is expected as a result of project
(cont'd) action.

16. Comment: Will there be associated impacts on accessibility to areas presently designated for recreational uses?

Response: There are no known impacts on accessibility to public areas which at present are designated for recreational uses.

17. Comment: The DEIS does not adequately address the project's impacts on the area's wildlife. This is particularly significant due to the possible presence of three endangered wildlife species.

Response: Information relating to wildlife can be found both in the Wildlife Habitat Measures and Environmental Impact sections.

This project has no known impacts on any endangered wildlife species.

18. Comment: What is meant by "land capability classes for dry land soils" I-8?

Response: Capability classification is an interpretive grouping made primarily for agricultural purposes. In this classification arable soils are grouped according to their potentialities and limitations for sustained production of the commonly cultivated crops. Nonarable soils are grouped according to their potentialities and limitations for the production of permanent vegetation and risk of soil damage.

Soils in Classes I through IV are classified according to their continuing limitations for sustained production of cultivated crops. Some soils in Classes V, VI and VII may be used for specialized crops that are normally grown without tillage. Most soils in Class VI and Class VII may be used for forestry or range. Those in Class VIII are suitable only for watershed, recreation, and wildlife.

19. Comment: What is a "type 5 irrigation tail water pond"?

Response: As quoted from U. S. Fish and Wildlife Service Circular 39, Wetlands of the United States, Type 5 Inland Open

Response: Fresh Water is "Shallow ponds and reservoirs usually (cont'd) less than 10 feet deep and fringed by a border of emergent vegetation."

Advisory Council on Historic Preservation
(Letter of August 29, 1977)

Comment: Nevertheless, until the requirements of Section 106 are met, Council considers the DES incomplete in its treatment of historical, archeological, architectural and cultural resources. To remedy this deficiency, the Council will provide, in accordance with its "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800), substantive comments on the effect of the undertaking on these properties. Please call Michael H. Bureman at (303) 234-4946 to assist you in completing this process.

Response: The final environmental statement contains a discussion of construction impacts on all known archeological sites in the project area. As noted, the Soil Conservation Service is aware of its responsibilities under federal law and is following the procedures set forth in Title 7 CFR Part 656. A cultural resource management plan has been developed by the Office of Cultural Resource Management, Department of Anthropology, Arizona State University, in consultation with the State Historic Preservation Officer (SHPO) and Interagency Archeological Services (IAS). This, and the final plan to recover, protect or preserve cultural resources which will be developed at the appropriate time in consultation with the SHPO and Heritage Conservation and Recreation Service - Interagency Archeological Services will be submitted to the Advisory Council for review and comment.

State and Local Government

Governor of Arizona - Arizona Water Commission
(Letter of August 22, 1977)

No response necessary.

Arizona Bureau of Geology and Mineral Technology
(Letter of November 17, 1977)

No response necessary.

Agriculture and Horticulture Department
(Letter of September 2, 1977)

No response necessary.

Department of Health Services
(Letter of November 21, 1977)

No response necessary.

Department of Public Safety
(Letter of November 3, 1977)

No response necessary.

Transportation Planning Division, Arizona Department of Transportation
(Letter of September 12, 1977)

1. Comment: Page 13, paragraph 5: Any consideration given to reducing channel width at State Highway crossings?

Response: The planned floodway provides channel stability at least total cost (this includes State Highway crossings).

2. Comment: Page 12, paragraph 6: Please coordinate floodway design with existing and anticipated transportation facilities and the expansion of those facilities. To (a) the year 2000 and (b) as the facilities are expanded to meet urban growth demands.

Response: The Soil Conservation Service has coordinated and will continue to coordinate this project with the Arizona Department of Transportation.

3. Comment: ADOT design coordination should be acquired for crossings as indicated on map Appendix B; State Routes 93, 87, and 360, US Routes 60, 80, and 89. None of your maps indicate the location of State Route 360 which traverses your flood control work area.

Response: Refer to response in comment 2. State Route 360 has been put on the Location Map. In Appendices B and D it is intended to only show the roads that the project has impact on.

Arizona Game and Fish Department
(Letter of September 29, 1977)

1. Comment: We still believe there should be further clarification of habitat losses to be incurred as a result of the project.

Response: Refer to the Wildlife Habitat Measures and Environmental Impact sections for a description of wildlife habitat and habitat gains and losses resulting from project action.

2. Comment: An historic account of the "triangle" area which is bounded by State Highway 87 and 93 would be beneficial for a more complete understanding of project effects on wildlife habitat.

Response: In describing the vegetative history of the "triangle" area it needs to be pointed out that in the period from 1925 to 1927 the RWCD Canal and associated floodway were constructed to Hunt Highway. After this irrigation tailwater and floodwater were diverted to the south. During the years from 1945 to 1947 this floodway was extended south and west for about 1.5 miles. At the floodway outlet these waters flowed westward. Another source of diverted water flowing periodically into this general area comes from the Santan Canal.

A photo taken in 1935 shows vegetation growing south of Hunt Highway. Between the years 1935 to 1964, photos showed that the vegetated areas fluctuated in size. In 1964 the area between Hunt Highway and Gilbert Road was developed to be used for irrigated cropland and the floodway extended to State Highway 87. Again in 1969 another block of land between Gilbert Road and State Highway 87 was developed.

Aerial photos taken in 1964, 1969, and 1971, showed small areas within the "triangle" had vigorous growth. The effect of water spreading dikes within this area apparently were helping to cause more water to be detained and used by native vegetation.

3. Comment: There is still no mention made of the probable decline of the habitat west of Highway 93 which also includes mesic vegetation maintained in an arid area as a result of the current location of the terminus to the existing RWCD Floodway. We suggested previously, and still believe, there is a need for additional explanation and details concerning the losses of these habitats. Such detail would be most valuable if it included maps and a tabular representation of "with" and "without" project effects on the vegetation of this area.

Response: Additional information has been included in sections entitled Wildlife Habitat Measures, Plant and Animal Resources, and Environmental Impact - Structural Measures.

4. Comment: The "new" draft statement tends to downgrade the quality of the wildlife habitat lost and does have figures much less than originally displayed. We understand the reasoning for the reduced figures, in that it is presumed these lands will be cleared for agricultural purposes even without this project. The fact remains that there are 2,240 acres of native vegetation at the present floodway outlet of which 1,300 acres represent desert riparian vegetation as reported in the "team" biologist report.

We point this out, because we firmly believe the area downstream from the present floodway outlet is very important wildlife habitat. This area is one of the better dove producing areas and provides some of the best dove hunting in the state. We feel the environmental statement should reflect this.

Response: The above acreage figures are correct. With or without the planned project it is projected that the majority of the 1,300 acres of desert riparian vegetation will be lost because of changed land use. It also can be pointed out that this area is not ordinarily open to the public for hunting.

5. Comment: Through the various coordination meetings this agency, the Fish and Wildlife Service and the Soil Conservation Service have discussed mitigation for the wildlife losses incurred as a result of the project. We have generally agreed that the 280-acre parcel, or its equivalent, along the Gila River near the Robbins Butte Wildlife Area was adequate. The draft statement, however, makes no mention of the recommendation for fencing this property to protect it from grazing and woodcutters. Without this protection, the value of the mitigation lands would be decreased and not equal to the projected habitat units credited for mitigation.

Response: A portion of the proposed area is now fenced. That portion that is not will be fenced. It is stated in the Wildlife Habitat Measures section that "An appropriate parcel will be purchased and fenced to preserve wildlife values."

Office of Planning, Department of Economic Security
(Letter of September 2, 1977)

No response necessary.

Arizona Power Authority
(Letter of September 6, 1977)

No response necessary.

Arizona State Land Department
(Letter of September 22, 1977)

No response necessary.

Arizona State Museum - The University of Arizona
(Letter of August 25, 1977)

No response necessary.

Arizona State Parks - Natural and Cultural Resource Conservation Section
(Letter of January 30, 1978)

Comment: I understand that the Soil Conservation Service is requesting the opinion of the State Historic Preservation Officer concerning the eligibility of the 42 inventoried archaeological sites* located in the project area for inclusion in the National Register of Historic Places and that my opinion may be submitted to the Secretary of the Interior with a formal request for a determination of eligibility on this property. This statement confirms my consultation as part of the determination of eligibility procedures.

In my opinion, the property (as an archeological district) is eligible for inclusion in the National Register.

* as listed in the Archaeological Management Program report by Glen Rice (ASU), dated December 1977.

Response: Upon application of National Register criteria as set forth in Title 36 CFR Part 60.6, the Soil Conservation Service agrees that the cultural resources of the area are likely to yield information important to prehistory and would be eligible for nomination to the National Register of Historic Places.

Arizona State Parks - Natural and Cultural Resource Conservation Section
(Letter of March 20, 1978)

No response necessary.

Arizona State Parks Board
(Letter of September 8, 1977)

No response necessary.

Arizona Water Commission
(Letter of September 30, 1977)

1. Comment: Page 13, 1st paragraph, lines 4 and 5: "(4) Achieving additional control of floodwaters within the Lower Queen Creek Watershed."

Comment: The use of the term "additional control" is vague and (cont'd) could be replaced with a more specific description, such as referring to a 100-year level of control.

Response: Appropriate addition made.

2. Comment: Page 27, 2nd paragraph, lines 20-21: "The Granite Reef Dam is located in the northern portion of the Project area. Water is diverted into three canals; the Roosevelt Water Conservation District Canal, the Eastern Canal, and the Consolidated Canal East Branch."

It may be worthwhile to note that water is first diverted into the Southern Canal and then into the three sub-canals stated.

Response: Appropriate addition made.

3. Comment: Page 31, 2nd paragraph, line 15: "non-white"
Page 33, 1st paragraph, line 5: "minority"

It appears that the terms "non-white" and "minority" are used interchangeable. Mexican-Americans are classified as a minority but not as a non-white. If the classification of non-white was incorrectly assumed to include Mexican-American then the statement "fifty percent of the non-white residents are Negro" would be incorrect since it appears that most of the minorities in the project area are Mexican-American.

Response: The term non-white has been deleted and the term minority has been used.

4. Comment: Page 47, "Floodwater Damage": Specific types of damages from the 1954 flood are discussed; however, the locations and concentrations of these damages are not presented. If there were no specific concentrations and the flooded areas were dispersed equally among the watersheds, this information should be stated.

Response: Appropriate addition to this section has been made.

5. Comment: Page 48, 7th paragraph, lines 38-40: "About 17 acre-feet (25,000 tons) of sediment from the RWCD Floodway area reach of the Gila River annually under present conditions."

If the sentence is to read correctly the word "of" should be omitted.

Response: Appropriate change made.

6. Comment: Page 51, 4th paragraph, lines 16-19: "The problems associated with this area is not one of providing additional wildlife habitat but of retaining some remnant of existing habitat in the face of urbanization."

The term "some remnant of" is an emotional or judgmental phrase and, without quantification, should be omitted.

Response: Appropriate change made.

7. Comment: Page 56, 1st paragraph, lines 1-6: The sediment concentrations discussed were primarily based on samples taken from irrigation flows released from San Carlos Reservoir to be diverted at the Ashurst-Hayden Diversion Dam. Only larger flood flows will overflow the diversion structure and have a downstream impact. The sediment concentration for these larger flood flows will be substantially greater than the average concentrations presented.

Response: Related information has been added to clarify the impact of larger flood flows and related suspended sediment flowing past the Gila River Diversion which is upstream of the Ashurst-Hayden Diversion Dam.

Center for Public Affairs, Arizona State University
(Letter of September 13, 1977)

1. Comment: There is no presentation of the reaction of the Pimas on the Gila River, to this arrangement; nor of arrangements to assure continuity of assurance of delivery and/or acceptance of the water.

Response: This project has been and will continue to be coordinated with the Gila River Indian Community. The proposed project is the best way of conveying floodwaters across reservation lands.

2. Comment: The mitigation of water pollutants received now by the Pimas from upland sources is not a project benefit, since such pollution is to be terminated by its originator.

Response: The proposed floodway will result in the reduction of cropland flooding. Thus, the reduction of the amount of fertilizer, animal waste, pesticide, and sediment pollution flowing from the project area into the Gila River will result.

3. Comment: Aggregates are given for costs and benefits: more detail is needed.

Response: Detailed information relating to costs and benefits is available at the Soil Conservation Service office. The address is shown on the cover sheet.

4. Comment: No information is given on flooding increase to be caused by urbanization in the protected area.

Response: Information relating to the hydrologic studies for this project consider present and projected urbanization and is available at the Soil Conservation Service office.

5. Comment: Erosion, scour, and sedimentation benefits downstream in the project area protected are offset by the same events occurring on the Gila Reservation.

Response: This topic is discussed in both the Planned Project - Structural Measures and Environmental Impact sections. It is incorrect to say that, "Erosion, scour, and sedimentation benefits downstream in the project area protected are offset by the same events occurring on the Gila Reservation."

6. Comment: Construction and Operation and Maintenance employment is not a project benefit.

Response: The benefits attributed to employment resulting from the construction and operation and maintenance of the floodway were not used for project justification. However, the resulting employment from this project was assessed as having a favorable impact.

7. Comment: There is no projection of future benefits and costs: if future benefits increase, then these beneficiaries are better able to pay any costs of projects preferred by them. The separation of costs and benefits is not discussed.

Response: The average annual damage reduction benefits are based on reduced future flooding. The cost of operation and maintenance is based on costs expected to occur during project life.

For a further discussion of this topic refer to the Planned Project - Project Costs and the Favorable Environmental Impacts sections.

8. Comment: Recharge listed as a benefit, is not detailed in the report.

Response: As stated in the Environmental Impact section, "Groundwater recharge will increase by about 1,300 acre-feet per year. This will occur in the floodway and the Gila River. Analysis of stream channel losses in the Gila River indicates high recharge potential. Considering the amount of groundwater in storage, the effects of the project will be minimal."

9. Comment: The benefit of improved living mentioned is not supported in the report.

Response: Refer to the Environmental Impact - Economic and Social section for a discussion of this topic.

Central Arizona Association of Governments
(Letter of October 14, 1977)

1. Comment: The study appears to ignore the potential damage to an additional 10,000 acres which will be flooded on the Gila River (Page 64) in its evaluation of the cost effectiveness of the project. These costs - when properly considered would very likely make the entire project cost ineffective.

Response: The 100-year discharge from the RWCD Floodway is expected to inundate approximately 10,000 acres of native vegetation in the reach of river from the floodway outlet to the vicinity of St. Johns Mission. This same area is presently flooded, on the average, once every four years from flows in the Gila River.

Our studies show there is no evidence to support the assumption that the additional floodwater or suspended sediment flowing into the Gila River will greatly increase erosion, flood plain scour, and sediment deposition or additional area flooded downstream from the project.

2. Comment: The assumption in the report that rapid urbanization will occur in the flood area goes against any valid concept of land use planning. Arizona has room for growth in areas that are not flood prone.

Response: Urban projections used originated with the Maricopa Association of Governments and the Pinal County Planning and Zoning Department. Urbanization of this area is going on at present.

Council for Environmental Studies
(Letter of September 9, 1977)

No response necessary.

Indian Affairs Commission
(Letter of September 2, 1977)

No response necessary.

Maricopa Association of Governments
(Letter of September 2, 1977)

No response necessary.

Mineral Resources Department
(Letter of September 2, 1977)

No response necessary.

Prescott Historical Society
(Letter of November 15, 1977)

No response necessary.

City of Chandler
(Letter of August 23, 1977)

Comment: The only comment offered, other than general concurrence with the draft, relates to "Nonstructural Measures" under the "Planned Project" section. Like Mesa, the City of Chandler has adopted regulations that require developers to make provisions in all new subdivisions, commercial and industrial projects to store on-site runoff. The amount required to be stored for a minimum of 24 hours is the runoff from a 50-year, 24-hour storm.

Response: A paragraph reflecting the above information has been included in this section.

Flood Control District of Maricopa County
(Letter of October 12, 1977)

1. Comment: Structural Measures (Page 12): This section of the Environmental Impact Statement indicates that considerable landscaping will be installed in various reaches of the project and that irrigation will be required. It should be pointed out that a source of water for irrigation purposes is not available and, if irrigation is to be a part of the project, a source of water must be developed. Also, the EIS indicates that spoil-disposal areas and the floodway itself will be seeded and irrigated. This office is of the opinion that to irrigate the approximate 27 miles of this channel is infeasible both from a cost point of view and a nonavailability of a source of water.

Response: It is possible that water can be purchased from individuals or groups such as farmers, and the City of Mesa.

It is planned that just the landscaped areas adjacent to road crossings and native trees and shrubs will be irrigated for two growing seasons or less depending on the species' ability to become established. Areas seeded to native grass species will not be irrigated.

It is incorrect to assume that in any one year the total 27 miles of floodway will be irrigated. The maximum length to be irrigated would be two construction reaches in any one year.

2. Comment: Page 18 of the EIS states that an internal drainage system will be developed upslope of the floodway. A plan for the upslope drainage system has not been developed and it is not clear who would design, construct, and maintain such a drainage system. It is suggested that all reference to this drainage system be deleted from the EIS.

Response: The paragraph relating to the above subject has been deleted. However, internal drainage systems upslope of the floodway should be installed to carry the runoff water through the developments to the RWCD Floodway.

3. Comment: The Draft EIS does not include fencing the project right-of-way. This office concurs that fencing is not required; however, fencing of certain structures for security reasons may be advisable. This requirement may be deleted during design of the channel.

Response: It is agreed that fencing of certain structures may be advisable. The 280 acres of land purchased for mitigation purposes will be fenced to keep cattle out and to deter woodcutting.

4. Comment: Wildlife Habitat Measures (Page 18): The Flood Control District recognizes the need for mitigation of wildlife habitat on this project. However, mitigation requirements as are stated in the Draft EIS are based on 1975 and 1976 land uses and land development construction. In view of this, we suggest the following statement be included in the final EIS and Supplements. "Final mitigation requirements are to be determined by construction phase when a construction contract is advertised for that phase. Offsite mitigation may be undertaken in the first phase with any reduction in the 280 acre present requirement used as mitigation for future projects."

Response: Projected land uses were used to calculate mitigation requirements rather than the land use existing in 1975 and 1976.

The following paragraph has been added to the Wildlife Habitat Measures section.

"Offsite mitigation requiring the purchase of 280 acres of land will be concluded prior to the construction of the floodway upstream of Gilbert Road."

NOTE: Subsequent discussion with the Flood Control District of Maricopa County indicates they are willing to purchase the 280 acres prior to construction upstream of Gilbert Road without further evaluation of mitigation requirements.

5. Comment: Operation and Maintenance (Page 19): We suggest the following statement be included in this section. "The sponsor will work with the Soil Conservation Service during the design of this project to ensure that design contributes to efficient and economical operation and maintenance practices."

Response: A paragraph relating to this subject has been included in the Operation and Maintenance section.

6. Comment: Page 1, last paragraph: Delete last sentence.

Response: Appropriate change made.

7. Comment: Page 6, paragraph 6: "Maricopa County Flood Control District" should read "the Flood Control District of Maricopa County".

Response: Appropriate change made.

8. Comment: Page 16, paragraph 5: Change last sentence to read as follows: "Where land is purchased by the Sponsors, the land may be made available for public or private use or may be sold at the option of the local Sponsors."

Response: Appropriate change made.

9. Comment: Page 17, paragraph 1: After first sentence insert: "Soil Conservation Service has considered spoil disposal"

Comment: site requirements. Conceptually, the spoil disposal (cont'd) program is as follows:"

After the last sentence add following sentence: "The Soil Conservation Service and the Sponsor will jointly develop a spoil disposal plan for the project as required for each reach of construction."

Response: Appropriate addition made.

10. Comment: Page 17, paragraph 2: Change last sentence to reflect a one year establishment period as specified in the Workplan Supplements.

Response: The Operation and Maintenance section has been rewritten to clarify the Sponsors responsibility for maintenance.

11. Comment: Page 17, paragraph 4: Replace third sentence with the following: "Subsidence monuments will be included in project design and installed under the construction contract. Monitoring will be a project requirement borne jointly by the Sponsor and the Soil Conservation Service.

Response: Appropriate additions made.

12. Comment: Page 18, paragraph 5: Delete entire paragraph referencing offsite drainage systems.

Response: Refer to the response made to comment 2.

13. Comment: Page 19, paragraph 4: Delete the last four sentences and add the following: "The remaining mitigation of loss of wildlife habitat can be satisfied by acquisition of additional habitat by the Flood Control District of Maricopa County. Currently, 280 acres would be required. Actual mitigation requirement will be determined as of the advertisement date for construction of each reach."

Response: Refer to the response made to comment 4.

14. Comment: Page 20, paragraph 1: Redefine "establishment period" to conform to comment on Page 17, paragraph 2 and with Supplemental Watershed Plans.

Response: Refer to the response made to comment 1.

15. Comment: Page 20, paragraph 2: After the first sentence add: "Disposal of sediment will be in accordance with sections of spoil disposal." Delete the remainder of the paragraph.

Response: The removal and disposal of sediment will be done periodically. Spoil disposal will be done at the time of construction. Therefore, the two operations are not totally similar.

16. Comment: Page 22, paragraph 1: Change to show Gilbert as incorporated community.

Response: Appropriate change made.

17. Comment: Page 56, last paragraph: Change wording in last sentence: substitute "are" for "should be".

Response: Areas of localized flooding in the project area have not been delineated to the detail that specific areas of ponding can be defined. Therefore, areas of ponding behind canal levees, elevated roads, or railroad embankments should be identified and development regulated.

18. Comment: Page 57, paragraph 1: Change to show Weekes Wash as only structure in Buckhorn-Mesa Watershed outletting into RWCD Floodway.

Response: Appropriate change made.

19. Comment: Page 57, paragraphs 2-5: Simplify the wording for clarity. We suggest using the terms "30 year protection" and "100 year protection" and give reaches in terms of road crossing or "miles from road" for location.

Response: Appropriate changes have been made.

20. Comment: Page 57, paragraph 6: Delete.

Response: This paragraph has been deleted. Refer to response made to comment 2.

21. Comment: Page 59, paragraph 7: In the first sentence add: "a maximum of" preceding "945". Change second sentence to read: "This includes a potential 280 that may be required for wildlife habitat mitigation purposes."

Response: For the planned project there is a need for a maximum of 945 acres. However, if spoil disposal requirements dictate that spoil be placed to a height less than that assumed then it is possible that more acreage will be needed. Also, based on our studies there is a need for 280 acres for wildlife habitat mitigation purposes.

22. Comment: Page 63, paragraph 2: Change to read as follows:
"Provide an outlet for the storm drainage systems
that may be installed upstream of the Floodway."

Response: Appropriate change made.

23. Comment: Page 63: Add new statement as follows: "Provide
through multiple use potential, increased public and
private recreation areas in floodway right-of-way."

Response: Appropriate addition made.

24. Comment: Page 68, paragraph 1: Do not agree that first sentence
is a correct statement. Paragraph requires clarification.

Response: This paragraph has been deleted.

Maricopa County Highway Department
(Letter of September 1, 1977)

Comment: Please include the requirements of the County Highway Department, that all roads now crossing the RWCD canal and proposed floodway shall be maintained by bridging the channel with a structure sufficient to carry four lanes of traffic.

Response: The Flood Control District of Maricopa County will coordinate the design and construction of county road bridges with the Maricopa County Highway Department.

Maricopa County Parks and Recreation Department
(Letter of September 12, 1977)

Comment: We would appreciate receiving additional information regarding the Pass Mountain Dam construction and its impact on our Utery Mountain Park. We also express our continual concern for the beautification of all structures and for the use of the adjacent land for parks and recreation purposes, including hiking and riding trails.

Response: The Buckhorn-Mesa Environmental Impact Statement discusses the Pass Mountain Dam and its relation to Utery Mountain Park.

It is proposed the floodway will be landscaped.

In the reaches where the floodway traverses urbanized and projected urbanized areas it is proposed that the maintenance roads be paved. These roads can serve as riding and hiking paths. Because of increased maintenance problems associated with motorized vehicles it is not desirable to allow them to travel for long distances on the bottom of the floodway.

Response: It is recognized that one way to maximize the utilization (cont'd) of the floodway area is to develop it to accomodate park-like activities. To accomplish this specific objective will require a sponsor who can obligate monies for recreational purposes. Such a sponsor could be the Maricopa County Parks and Recreation Department. They, together with the sponsors and the Soil Conservation Service can develop a recreational parks plan and implement it.

Maricopa County Planning Department
(Letter of September 21, 1977)

1. Comment: Disposal sites for the excavated materials, especially for the area between Brown Road and Apache Boulevard. Specific disposal sites should be listed in the E.I.S., because they can have an effect on the area in which they are located.

Response: The Soil Conservation Service and the Sponsors have considered spoil disposal site requirements. Sites have been tentatively selected. However, because of continuing land use changes and not knowing how the spoil might be disposed of, at the time of construction, it is not certain that these sites will be used. A spoil disposal plan for each reach of construction will be developed.

2. Comment: Proposed floodway's impact on Leisure World. This is an important subject that should be discussed, since the floodway passes close to the development.

Response: The Soil Conservation Service and the Flood Control District of Maricopa County have had several meetings with representatives of Leisure World. They would like to realign and enlarge the floodway and make it more a part of their development for both homes and recreation. Their recommendations will be considered when they are finalized.

3. Comment: The wildlife populations lost during the construction phase of the floodway. These should be delineated along with the amount of time required to have the populations re-established. In addition, the report should specify any wildlife populations that will be incapable of regeneration.

Response: Wildlife populations that depend on habitat destroyed during construction will be lost. These populations are expected to be reestablished when planted vegetation becomes sufficiently mature to satisfy food, cover, and nesting requirements. A 2 to 5 year period will probably be required for planted vegetation to mature to a point it will support wildlife populations. There are no known species of wildlife that will be incapable of regeneration.

Comment: On page 2, paragraph 2, the following statement is made, "diversion of flood flows will adversely affect 132 acres of native vegetation on the Gila River Indian Reservation." This is probably, true in the project area, however flood flows will affect the Gila River Indian Reservation across Pinal County and into Maricopa County some 20 to 30 miles distant from the terminus of the channel. The annual addition of 6700 acre-feet of floodwater into the Gila River, and onto the Gila River Indian Reservation, plus the increased amount of suspended sedimentation (17 to 25 acre-feet annually) which will be deposited into the Gila River will create considerably more flooding and destruction than this report indicates. True, the floodway will reduce erosion, flood plain scour, and sediment deposition in the area downslope of the floodway. However, it will greatly increase erosion, flood plain scour, and sediment deposition downstream from the project on the Gila River Indian Reservation.

On page 60, of the report, mention is made of a bridge approximately 12 miles downstream from the planned outlet of the floodway. This bridge is located at the intersection of the Gila River and the Phoenix-Maricopa Highway, which is a Federal Aid Secondary Highway in Pinal County. The average daily traffic on this roadway is in excess of 4,000 vehicles. During local storms in the valley to the southeast this bridge plus approximately 1/4 mile of roadway are impassable due to floodwaters overtopping the roadway and bridge. Thousands of dollars are spent after each storm removing sediment, debris, etc., from the channel and also from under the bridge.

The Gila River has no defined channel therefore the waters passing along the watercourse spread over miles of land. With the additional water, sediment, debris, etc., which will be added to the Gila problems downstream will greatly increase.

This Department would like to go on record as being opposed to this project. It is very apparent the report minimizes the amount of damage which will occur downstream on the Gila River Indian Reservation. As the area along the project is urbanized additional storm drainage will be entered into the floodway and the acre-feet into the Gila will increase.

Response: Section V of the Summary has been changed to read: Diversion of flood flows will adversely affect 132 acres of desert riparian vegetation, which is within an area bounded by the floodway and Highways 87 and 93.

Response: It is important to place in the proper perspective that amount of floodwater and sediment being discharged from the floodway into the Gila River to that which is in the river with and without the construction of the floodway. The following information is presented to further explain the impacts of this project.

There are two things to consider when evaluating present and with project flood flow conditions on the Gila River. First, it is important to understand that the average annual runoff volume, estimated to be 6700 acre-feet, occurs in several runoff periods during the year. It is expected that, in an average year, 2 or 3 runoff events will occur. It is to be understood that this annual runoff does not occur in just one runoff event.

Second, the Gila River has a very limited channel capacity. As a minimum it is estimated that 500 cfs can be conveyed within the existing channel without significant out-of-channel flow.

Flooding along the Gila River is expected to start with a discharge occurring from the RWCD Floodway on the average of once in 2.5 years. This is to be compared to annual flooding caused by runoff from the Gila River.

The flowage area along the Gila River has been determined by hydraulic analysis, field examination of the flood plain, and aerial photos of historic floods (1972, 1973 and 1977). This evaluation has been compared with studies found in the "Report on Buttes Dam and Reservoir, Middle Gila River Project, Arizona", Bureau of Reclamation, January 1961.

Projected urbanization estimated to take place over the life of the project is reflected in the determination of discharges of floodwater and sediment from the project area.

Conditions described on page 60 relate to the 100-year flood. This is an infrequent flood event. Flood flows associated with the 100-year event and coming from the project area will inundate 10,000 acres along the Gila River floodplain. This area is in the reach from the floodway outlet to St. Johns Mission and is at present flooded on the average of once every four years by the Gila River. The average annual area flooded from water being discharged from the project area onto the Gila River flood plain is about 1,500 acres. This can be compared to an average annual area flooded, of more than 6,400 acres, caused by Gila River floodwaters.

Response: The relationship of annual peak discharge to frequency of (cont'd) floodwaters coming from the project area and by the Gila River is compared in the following table.

<u>Frequency</u> (Avg Recurrence-Yrs)	<u>Annual Peak Discharge (CFS)</u>	
	<u>RWCD Floodway</u>	<u>Gila River</u>
100	8,700	78,400
50	6,100	60,500
10	2,200	24,500
5	1,200	13,900
2	350	5,600

The 100-year annual peak discharge from the project area is equivalent to the 3-year annual peak discharge from the Gila River.

Relatively slow velocities of Gila River floodwaters flowing overland are a result of the broad vegetated flood plain. The slow velocities of floodwaters result in minimal streambank erosion and flood plain scour for flood flows coming from either the Gila River drainage or from the RWCD Floodway.

This project will greatly relieve the floodwater problem in the vicinity of the Maricopa Highway which is in Maricopa County and within the flood plain. However, in Pinal County it is readily apparent that the Phoenix-Maricopa Highway bridge crossing the Gila River will experience increased floodwater and sediment problems. As related to floodwater and sediment deposition, these increased problems are considered insignificant because the bridge now has limited capacity through which to adequately allow floodwaters to flow.

The amount of suspended sediment will be increased by an average annual amount of 8 acre-feet in the vicinity of St. Johns Mission. On the average, this amount is delivered in 2 or 3 storms per year. This amount is the difference between the present average annual suspended load delivered to the Gila River (17 acre-feet) and the future with project average annual suspended load (25 acre-feet). This can be compared to an average annual amount of about 95 acre-feet of suspended sediment which is transported through the river reach in the vicinity of the St. Johns Mission.

Our studies show there is no evidence to support the assumption that the additional average annual amount of 6,700 acre-feet of floodwater and related suspended sediment flowing into the Gila River will "greatly increase erosion, flood plain scour, and sediment deposition downstream from the project."

Arizona Public Service Company
(Letter of September 29, 1977)

No response necessary.

East Maricopa Natural Resource Conservation District
(Letter of January 10, 1978)

1. Comment: The only part of this project we disagree with is the need for wildlife habitat mitigation. We question whether this project will result in any loss in wildlife habitat.

Response: An interagency team of biologists together with other specialists made an assessment of the natural wildlife habitat that would be impacted by the project. In part, these specialists were assisted by the Flood Control District of Maricopa County.

The evaluation showed that the acreage and habitat units of desert shrub and cropland will increase with the construction of the project. The desert shrub vegetative type is composed of forbs, grasses, shrubs, and some cacti. Desert riparian acreage will decrease significantly by adding the project. Desert riparian vegetative type includes trees and shrubs together with other vegetation. Plans, therefore, are proposed to mitigate and compensate for wildlife habitat losses on desert riparian vegetation only.

2. Comment: We feel that the floodway will prevent much damage to irrigated cropland, an important forage area for indigenous species, and at the same time put additional water into the Gila River and thereby enhance feed production and cover for wildlife along the river bottom.

Response: We agree with this statement.

3. Comment: On page 53 to 55 of the Draft EIS, the reason for mitigation is shown as a loss in habitat in the triangle area on the Gila River Indian Reservation. The project will divert the flow of runoff and tailwater from this area into the Gila River. The triangle area is a man-made habitat. Its present productivity is a result of extra water received mainly from irrigated lands with some runoff from the present RWCD Floodway. Furthermore this area is one earmarked by the Gila River Indian Community to be brought into cultivation in the near future. Essentially we are taking water from one area and moving it to another area, and we feel that the overall impact on wildlife habitat will be, if anything, better with the project.

Response: There are three general areas where wildlife habitat is impacted. One area is the floodway right-of-way and the second are the spoil disposal areas. The third is the area termed the "triangle".

The impact of the project was determined by assessing present conditions and comparing them to future conditions which included changes in land use.

Constructing the floodway and outletting floodwater into the Gila River will provide an increased reach of riverbed to be used as a recharge basin and also, to supply supplemental water to be used by riparian-type vegetation.

4. Comment: It is our opinion that the purchase of 280 acres of land elsewhere to mitigate losses due to the project is unnecessary and a waste of taxpayers money. We also wonder how the Game & Fish Department and Fish and Wildlife Service can demand land be acquired for lost habitat when the area affected is land over which they have nothing to say as far as habitat management.

Response: The enactment of the National Environmental Policy Act, P.L. 91-190, pointed out that there is a need to mitigate the loss of wildlife resources as well as to other elements of the environment. Soil Conservation Service policy states that potential habitat losses caused by project works of improvement must be mitigated as fully as feasible. It was determined that 280 acres of land would be needed to partially mitigate wildlife habitat losses. An additional 75 acres of land within the floodway right-of-way, will be planted to desert riparian vegetation to fully mitigate this loss.

Public Law 91-190 also pointed out that all agencies of the Federal Government, in cooperation with State and local governments, shall utilize a systematic, interdisciplinary approach in planning and decision making which may have an impact on man's environment.

Other Groups

Gila River Indian Community (Letter of October 12, 1977)

1. Comment: The present capacity of the Gila River is not adequate to accomodate sedimentation and debris, in addition to major floodwaters. As stated on Page 55, the project will result in an annual increase in suspended sediment

Comment: of eight acre-feet, irregardless of the occurrence of flood conditions. Such accumulated deposits will only function to further reduce the carrying capacity of Gila River during serious flooding. No mention is made in your report of any proposed maintenance or removal procedures to alleviate this inevitable result, nor a designation of responsibility or liability for any necessary maintenance methods.

Response: Deposition of suspended sediment is a complex process and difficult to predict. It is known that the average annual volume of suspended sediment will not normally occur within one flood runoff or be deposited in one location. Any deposition from a flood runoff from the project area will be affected by subsequent flows--especially from the Gila River. The result will be a continual scouring, shifting, and spreading process that will not require maintenance.

2. Comment: This Committee is concerned about the location specifics of any road bridges and railroad bridges scheduled for construction within the Reservation. We formally request the opportunity to participate in reviewing the sites for such structures, inasmuch as their location can have serious impact on access and other travel factors for residents of this Community.

Response: The Flood Control District of Maricopa County has written a letter on October 25, 1977, to Governor Alexander Lewis, Sr. of the Gila River Indian Community, concerning the location of roads and bridges.

3. Comment: We request more specific information as to proposed location for deposits of any excavation materials connected with the entire project, insofar as they affect Reservation lands. The statement (Page 62) that "construction...will not result in any unusual land value changes" is casual and undocumented. Reservation land is perhaps the most valuable natural resource of this Community, and its appropriate utilization is of prime importance.

Response: A set of plan-profile maps showing alignment of the floodway and irrigation lateral 9-49 and the location of ownership and designated spoil disposal areas was given to your office on October 13, 1977. The selection of the designated spoil disposal areas was coordinated with staff members of the Bureau of Indian Affairs at the Sacaton Office.

Response: The Soil Conservation Service, together with Sponsors, (cont'd) intend to closely coordinate with and ask for concurrence from the Gila River Indian Council in the location of all spoil disposal area on the Reservation.

4. Comment: As a result of the project, an additional flow of 6,700 acre-feet of water will be introduced in that reach between the outlet and St. Johns Indian School (Pages 60 and 64), resulting in 10,000 acres being flooded more frequently. We submit that this is a very generalized, undocumented statement and, we feel, unrealistically conservative. Therefore, we wish to go on record in objection to this seriously adverse environmental impact. Since the Gila River is the designated "disposal area", in the context of this project, we would like to see more effective provisions delineated for the protection of the environment.

Response: The Gila River is the present natural outlet for floodwaters coming from the project area. It is proposed that the present point of outlet be moved upstream about 25 miles.

On the average the 10,000 acres mentioned is within the Gila River flood plain and at present is being flooded by the Gila River, on the average of once every four years. Floodwaters coming from the project area will only flood this area on the average of once in 100 years.

The flowage area along the Gila River has been determined by hydraulic analysis, field examination of the flood plain, and aerial photos of historic floods (1972, 1973 and 1977). This evaluation has been compared with studies found in the "Report on Buttes Dam and Reservoir, Middle Gila River Project, Arizona", Bureau of Reclamation, January 1961. Our studies which have been reviewed by your consultant engineer, show there is no evidence to support the assumption that the additional 6,700 acre-feet of floodwater or suspended sediment flowing into the Gila River will greatly increase erosion, flood plain scour, and sediment deposition downstream from the project.

5. Comment: It is not our intent to oppose this project, but our comments reflect a serious concern as to the adequacy of the project plans in preventing critical and irreversible degradation of the environment of Gila River Indian Reservation. Again, we refer you to GR 179-73 (June 30, 1973):

Comment: the intent of the legislation was to support the project (cont'd) and also "create minimum damage and utilization of reservation lands." We wish to be convinced that this will indeed occur. It is apparent that adequate maintenance provisions have been insufficiently addressed in terms of protecting the integrity of Tribal lands impacted by this project.

Response: This topic is discussed in the Operation and Maintenance section.

Gila River Indian Community
(Letter of December 2, 1977)

1. Comment: The design capacity of the RWCD Floodway is 8,700 c.f.s. The 100-year flood, without Queen Creek controls and retention structures, would result in peak flow at about 19,000 c.f.s. in the RWCD; 8,700 c.f.s. would represent a flood frequency of 30 years.

The RWCD Floodway should be evaluated, and benefits and damages determined for all alternatives, with and without any anticipated upstream controls.

Response: This topic is discussed in the Planned Project, Environmental Impact - Structural Measures, and Alternatives sections.

2. Comment: Groundwater recharge will be affected and floodwater recovery will be reduced. Rights to existing water, locations of recovery, and changes in sedimentation and groundwater levels should be considered. Diversion of sheet flow would be a natural consequence of the RWCD Floodway project; this effect should be evaluated.

Response: These topics are discussed in the Environmental Impact section.

3. Comment: The area of wildlife habitat and usable range lands that would be affected is considerable. Present patterns of flooding, even in minor rains, contribute to the heavy riparian vegetation along streambeds. The economic value of these areas should be considered.

The report suggests that the loss of wildlife habitat be mitigated by establishment of an additional area forty (40) miles downstream and outside the Reservation boundaries. This area, besides not being readily accessible to G.R.I.C. residents, would not be under

Comment: the jurisdiction of the Tribal Government. This entire
(cont'd) evaluation of land value loss, changes in wildlife
habitat, and land use changes in the project vicinity,
plus the resulting effect on the residents of G.R.I.C.,
does not provide acceptable answers and should be re-
considered.

Response: Refer to the following letter of response from Governor
Alexander Lewis, Sr. to Thomas G. Rockenbaugh, dated
January 6, 1977.



GILA RIVER INDIAN COMMUNITY

SACATON, AZ. 85247

ADMINISTRATIVE OFFICES
BOX 97 - (602) 562-3311

January 6, 1976

Mr. Thomas G. Rothenbaugh
State Soil Conservationist
230 North 1st Avenue
Phoenix, Arizona

Dear Mr. Rothenbaugh:

The Gila River Indian Community has been informed that the Federal Fish and Wildlife Service has declared an area within the Reservation a prime Wildlife habitat. This habitat being formed and fed from Queen Creek flood waters.

Within this flood prone wildlife habitat is 920 acres of San Carlos Irrigation Project Class II land. Unless this land is properly subjugated, its water rights may be jeopardized. For this reason, the Tribe wishes to inform the State Soil Conservation Service and other interested parties that this area will be developed into agricultural lands with or without Federal assistance. Queen Creek flood waters will be channeled on to the Gila River flood plain, which will in turn bolster the White Wing wildlife habitat located there.

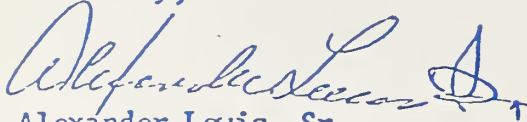
The Tribe would like to remind all interested parties that Queen Creek was illegally diverted from its natural channel on to the Gila River Reservation by upstream irrigation water users. Most of the "identified" wildlife habitat located just south of Last Chance and lying between Highway 93 and 87 is land presently being artificially sustained with upstream irrigation tailwater. In addition there is no adequate drainage for the water that collects there and this invariably is a health hazard.

The Gila River Indian Community is one of many co-sponsors of the Queen Creek Flood Project. It is anticipated that by channeling flood waters and upstream tailwater that we can avoid further damage to lands and property. The Tribe has committed rights-of-way for the flood channel in this multi-agency effort to protect all people, their property, and the natural habitats.

The tribe invites all interested parties to discuss any aspect of the Queen Creek and Gila River Flood Control Project with the Gila River Indian Community Council and the administration.

January 6, 1976

Sincerely,

A handwritten signature in blue ink, appearing to read "Alexander Lewis, Sr.", with a stylized flourish at the end.

Alexander Lewis, Sr.
Governor

4. Comment: Other than crossings of existing State Highways No. 87 and No. 93, and the rerouting of Gilbert Road, no consideration is given to additional at-grade crossings. The traditional routes of travel for G.R.I.C. residents, and ease of access across the channel, should be included in the plans.

Response: Refer to the response made to comment 2, of letter dated October 12, 1977, from Gila River Indian Community.

5. Comment: No government agency or any other group has any program to study flood prevention specifically throughout the Reservation. The U.S. Corps of Engineers, traditionally charged with such flood control projects and studies, anticipate no future such analyses. Mr. Bill Worthington, U.S. Corps of Engineers, confirms information from Mr. Bill Mathews that the Corps will in general cease making Flood Plain Information studies in F.Y. 1977. Long range plans for flood plain studies should be confirmed at this time to specifically include Gila River Indian Reservation.

Response: The Gila River Indian Community can request assistance from the Natural Resource Conservation Districts to study water related resource problems on the Reservation. Within the jurisdiction of Public Law 83-566 long range plans for flood protection may be obtained. Another program administered by the Soil Conservation Service is the flood hazard analysis program.

The flood insurance program can also be considered. It is administered by the Federal Insurance Administration.

6. Comment: Some additional design consideration should be made to include the most adverse flood conditions. What is the effect downstream when all watersheds contribute to maximum peak flow? What are the possible damages from flooding and the resulting sedimentation? To give a realistic evaluation of the effect of the RWCD Floodway, a complete hydrological study of the Gila River, from the Salt River to the east of the G.R.I.C. should be made, and it should assess effects of additional flows under all circumstances.

Response: Our studies which have been reviewed by your consultant engineer, did include using acceptable hydrologic and hydraulic standard methods to analyze the floodwater discharge relationships of the Gila River and the floodway. It was concluded that the effect of the floodwater contribution from the project area to the peak on the Gila River was insignificant for major storms.

Response: The configuration and size of the uncontrolled Gila River drainage area (7,114 square miles), as compared to the configuration and size of the uncontrolled project drainage area (258 square miles) effects the flood runoff in such a way that the probability of coincidental peak discharge is insignificant.

Public Law 566 precludes the Soil Conservation Service from working on drainage areas larger than 250,000 acres. The area of your concern is larger than this and would require a complex modeling which is beyond the scope of this study.

7. Comment: No provisions or commitments are included for any maintenance outside the R.O.W. limits of the floodway project, or downstream from the end of the project.

Response: The floodway, spoil disposal areas, and the area managed for wildlife purposes all will be operated and maintained. For more detailed information refer to the Operation and Maintenance section.

8. Comment: All archeological reconnaissance surveys should be completed, and all required procedures complied with. Sites should be mapped, and mitigation plans developed and approved, prior to preparation of final plans.

Response: The Environmental Impact Statement sets forth the actions to be taken to comply with federal law and Soil Conservation Service rules and regulations regarding protection of archeological properties.

9. Comment: The statements (Pages 2 and 64) that adverse environmental impact would affect 132 acres of Reservation land are not adequately addressed. Much of this "triangle" area is designated as Project Land (arable but not previously cultivated) in the C.A.P. Definite Plan Report (1972); it is also natural wildlife refuge.

There appears conflict in the statements (Pages 63-64), "...improving wildlife habitat in the Gila River from the floodway outlet to St. Johns Mission" and the annual introduction of "...an additional 6,700 acre-feet of floodwater into the Gila River in the reach between the floodway outlet and the St. Johns Mission."

Response: Refer to the response made in comment 3. Also, refer to the Plant and Animal Resources and the Environmental Impact - Structural Measures section for a discussion of the "triangle" under present and with project conditions.

Response: Constructing the floodway and outletting floodwaters
(cont'd) into the river will provide an increased reach of
riverbed to be used as a recharge basin and, also, to
supply supplemental water to be used by riparian-type
vegetation.

10. Comment: The addition of flood frequency affecting 10,000 acres
of Reservation land (Page 64) will certainly result
in inhibiting future development and the reduction
of land value.

Response: At present 10,000 acres along the Gila River are flooded
on the average of once in four years. With project
floodwaters from the project area will flood 10,000
acres along the river on the average of once in 100
years. Therefore, land values are expected to remain
unchanged and potential development not to be inhibited.

Refer to the response made in comment 4 of letter dated
October 12, 1977, from Gila River Indian Community.

11. Comment: "Designated disposal areas" for unusable excavation ma-
terial and construction spoil have not been identified.
We would like to review any such sites in advance, as
they related to G.R.I.C., not "immediately before con-
struction" as stated on Page 16.

Response: Refer to the response made in comment 3 of letter dated
October 12, 1977 from Gila River Indian Community.

Salt River Project
(Letter of October 13, 1977)

No response necessary.

Southern Pacific Transportation Company - San Francisco
(Letter of August 19, 1977)

No response necessary.

Individuals

James A. Blasdel
(Letter of October 11, 1977)

1. Comment: The floodway, which of course will not be carrying water
a great majority of the time, lends itself to use as a
parkway and recreational area. The impact statement
on page 63 under "Favorable Environmental Impacts" states

Comment: that the project will "improve the health, welfare, and quality of living in the project area." This obviously would be greatly enhanced with the inclusion of a parkway into the project in those areas where people live in the immediate surrounding areas.

Response: In the reaches where the floodway traverses urbanized and projected urbanized areas, it is proposed that the maintenance roads be paved. These roads can serve as riding and hiking paths. Because of increased maintenance problems associated with motorized vehicles it is not desirable to allow them to travel for long distances on the bottom of the floodway.

2. Comment: The project, as proposed, is going to have a greater visual impact than that which was acknowledged in the impact statement. The most extensive landscaping will be on each side of the road overpasses which will lessen the impact from the road, but do very little to offset the impact for those living in the area or using it for recreational purposes. Again, the impact statement states on page 60 that "The landscape design goal is to minimize the visual impact of the floodway." To maximize the utilization of this otherwise idle area, and to further meet the previously mentioned landscape design goal, a park type area seems the logical solution.

Response: It is recognized that one way to maximize the utilization of the floodway area is to develop it to accomodate park-like activities. To accomplish this specific objective will require that a group of interested citizens work with a sponsor who can obligate monies for recreational purposes. Such a sponsor could be the Maricopa County Parks and Recreation Department. They, together with the sponsors and the Soil Conservation Service can develop a recreational parks plan and implement it. To date insufficient interest in sponsoring such features have precluded the development of such a plan.

3. Comment: On page 51 in the impact statement it is mentioned that "Recreation demand is greater than normally would be expected. Residential development, much of which is oriented toward retirement community accommodations, is expanding at a rapid rate." Recognizing this to be the case, a recreational park area would meet the increasing demand, which is being placed on projects of this nature, to provide for these types of activities. This type of retirement community development is becoming most pronounced along the floodway north of the Apache Trail where large developments have recently been completed, and where more are to follow in the near future.

Response: Public groups working together with sponsoring local organizations and the Soil Conservation Service can accomplish this objective.

4. Comment: The previous points should be given serious consideration both in the planning phase as well as in the ultimate construction of the project. These points were discussed in a meeting on September 27 of this year, with Herb Donald, S.H. Brase, Bill Jolly, Les Bond, John Savicky, and Bob Ward of the Flood Control District of Maricopa County. It was the consensus of those present at this meeting that a park and recreational area should be established and that it would be beneficial to both the project and surrounding areas. It is our firm belief that steps should be taken to insure that the floodway will be improved in this manner.

To that end, we have retained Marv Larson of American Engineering to prepare a cross-section enclosed herewith as an alternative means to transport the anticipated water flows. It is our feeling that this cross-section will better provide for the recreational and esthetic requirements referred to in this letter and the impact statement. Of particular interest to us as property owners is that section of the floodway which extends north of the Apache Trail (Main Street) in the City of Mesa. This area is experiencing rapid growth and development, and the existing residents as well as those to come would benefit greatly from the recreational and esthetic improvements proposed in this letter.

Response: A design similar to the one you propose may be used if the floodway is used for recreational purposes.

REFERENCES

1. All information and data, except as otherwise noted, were collected by the Soil Conservation Service and the Forest Service, U. S. Department of Agriculture.
2. Flood Control District of Maricopa County, Arizona, Comprehensive Flood Control Program Report, (1963).
3. Soil Conservation Service, Department of Agriculture, Part 656 - Procedures For The Protection Of Archeological And Historical Properties Encountered In SCS-Assisted Programs, Federal Register, Vol. 42, No. 137, (July 18, 1977).
4. Bureau of the Census; Community Affairs Section of the Arizona Office of Economic Planning and Development, (1975).
5. U. S. Department of the Interior, Water Resources Data for Arizona, Water Year 1975, p. 232.
6. T. W. Anderson, Electrical-Analog Analysis of Ground-Water Depletion in Central Arizona, U. S. Geological Survey Water Supply Paper, (1968), p. 6.
7. Arizona State Land Department, Arizona Land Marks, Vol. 1, Book 5. (1971).
8. C. R. Dutt and T. W. McCreary, The Quality of Arizona's Domestic, Agricultural, and Industrial Water, (February 1970).
9. Arizona Highway Department, Draft Environmental Impact Statement, Superstition Freeway, (July 24, 1973).
10. U. S. Department of Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife of the United States, Federal Register, Vol. 40, No. 188, Vol. 41, Nos. 115 and 117, (September 26, 1975, June 14, 1976, and June 16, 1976, respectively).
11. W. L. Minckley, Fishes of Arizona, Arizona Game and Fish Department, (1973).
12. Glen Rice, An Archeological Resource Management Plan for the Roosevelt Water Conservation District Floodway, report prepared for USDA Soil Conservation Service, 1977.
13. John Antieau, An Archeological Survey of Selected Portions of the Roosevelt Water Conservation District Floodway, Pinal County, Arizona, report prepared for USDA Soil Conservation Service, 1977.

REFERENCES (CONT'D)

14. Danny Brooks, An Archaeological Investigation of the Queen Creek Project, report prepared for USDI National Park Service, 1975.
15. James Rodgers, An Archaeological Reconnaissance Survey of the Roosevelt Water Conservation District Floodway Project, Maricopa County, Arizona, report prepared for USDA Soil Conservation Service, 1975.
16. Bettina H. Rosenberg, An Archaeological Reconnaissance Survey of the Roosevelt Water Conservation District Floodway Project Spoil Disposal Areas, Maricopa and Pinal Counties, Arizona, report prepared for USDA Soil Conservation Service, 1976.
17. Whitlow Ranch Dam Flood Control Committee, Report On Whitlow Ranch Reservoir Queen Creek, Arizona (September 24, 1954).
18. U. S. Geological Survey, Annual Report on Ground Water in Arizona, Spring 1972 to Spring 1973, Arizona Water Commission Bulletin 7, (1974), p. 46.
19. U. S. Geological Survey, Folio of the Phoenix Area, Map I-845 F.
20. U. S. Water Resources Council, OBERS Projections, Standard Metropolitan Statistical Areas, Series E - Population, Vol. S, (1972), p. 178.
21. U.S. Department of the Interior, Bureau of Reclamation, Report on Buttes Dam and Reservoir, Middle Gila River Project, Arizona, (January 1961), p. 49-60.
22. Lower Colorado Region Comprehensive Framework Study, (June 1971).

APPROVAL

APPROVED BY:

 ACTING
Thomas G. Rockenbaugh
State Conservationist

APPENDICES

Appendix A - Comparison of Benefits and Costs for Structural Measures

Appendix B - Project and Flood Prone Area Map

Appendix C - Letters of Comment Received on Draft Environmental Impact Statement

Appendix D - General Land Ownership and Irrigated Croplands



APPENDIX A

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES



APPENDIX A - COMPARISON OF BENEFITS AND COSTS
FOR STRUCTURAL MEASURES

Dollars

Evaluation Unit	Average Annual		Benefit Cost Ratio
	Damage Reduction Benefits <u>1/</u>	Costs <u>2/</u>	
RWCD FLOODWAY	2,285,070	979,880	2.3:1.0
Project Administration	-	112,340	-
GRAND TOTAL	2,285,070	1,092,220	2.1:1.0

1/ Price base current normalized prices for agricultural products and current prices for agricultural and non-agricultural properties.

Appendix A damage reduction benefits are those estimated attributable to the RWCD Floodway, although an interdependent relationship exists between the flood prevention structural measures of the Buckhorn-Mesa, Apache Junction-Gilbert, and Williams-Chandler Watersheds.

2/ Price base 1977 prices.

August 1977



APPENDIX B

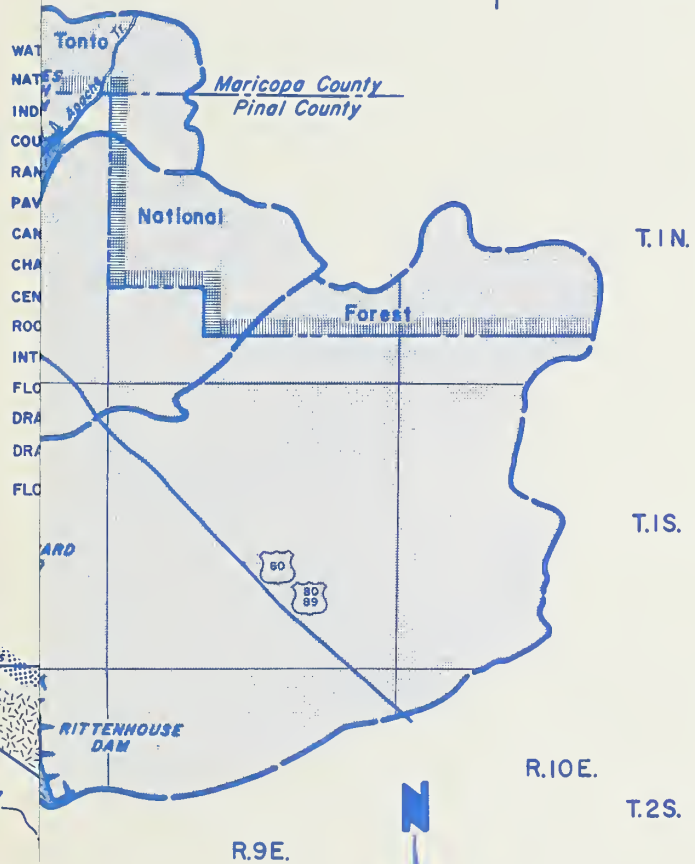
PROJECT AND FLOOD PRONE AREA MAP



SOIL CONSERVATION SERVICE

111° 20'

T.2N.



T.1N.

T.1S.

R.10E.

T.2S.

R.9E.

R.2E.

T.3S.

SUBJECT AND FLOOD PRONE AREA MAP

Roosevelt Water Conservation District Floodway
MARICOPA AND PINAL COUNTIES, ARIZONA

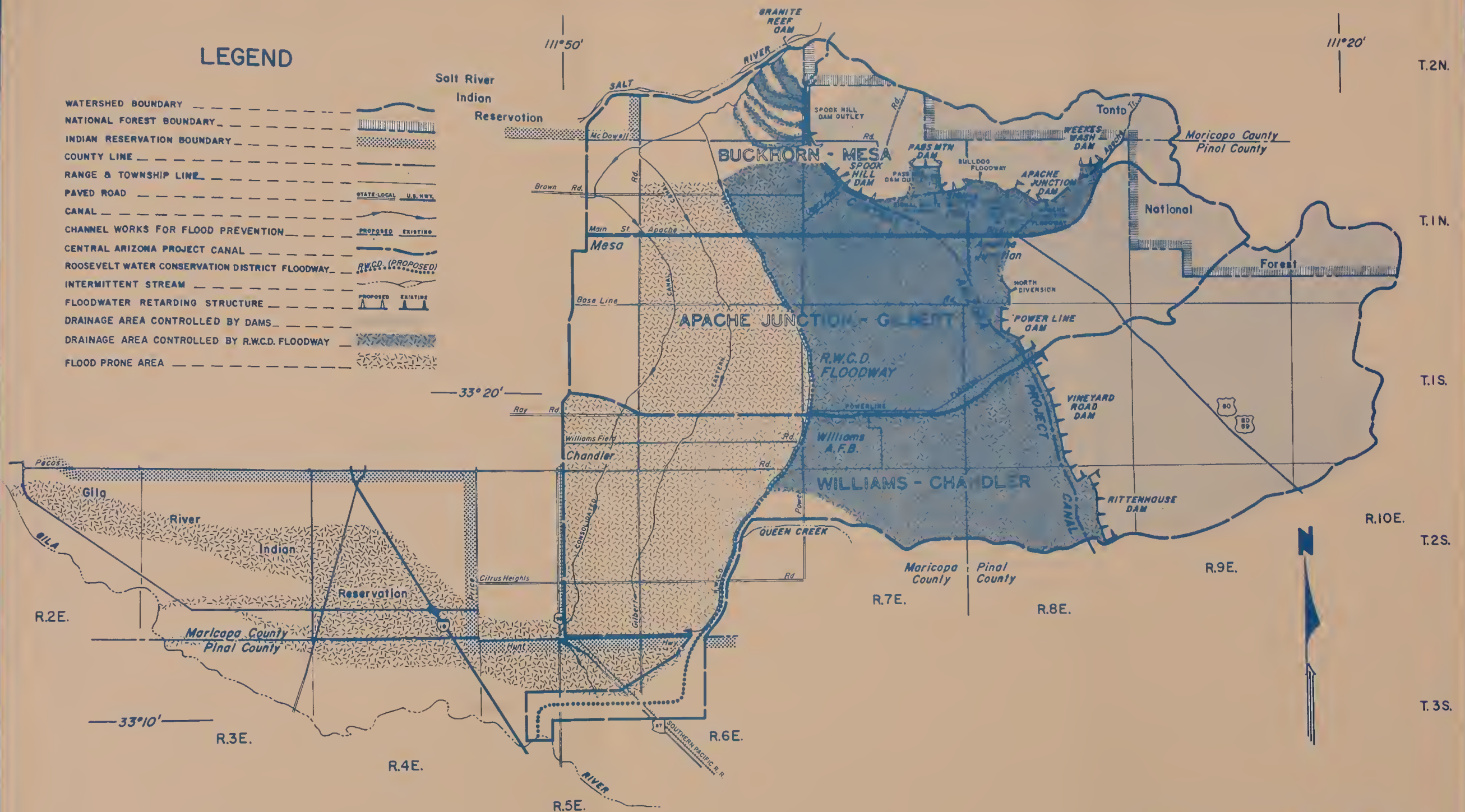
SEPTEMBER 1976

1 0 1 2 3 4 5
SCALE IN MILES



LEGEND

WATERSHED BOUNDARY	---
NATIONAL FOREST BOUNDARY	---
INDIAN RESERVATION BOUNDARY	---
COUNTY LINE	---
RANGE & TOWNSHIP LINE	---
PAVED ROAD	---
CANAL	---
CHANNEL WORKS FOR FLOOD PREVENTION	---
CENTRAL ARIZONA PROJECT CANAL	---
ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY	---
INTERMITTENT STREAM	---
FLOODWATER RETARDING STRUCTURE	---
DRAINAGE AREA CONTROLLED BY DAMS	---
DRAINAGE AREA CONTROLLED BY R.W.C.D. FLOODWAY	---
FLOOD PRONE AREA	---



PROJECT AND FLOOD PRONE AREA MAP
 ROOSEVELT WATER CONSERVATION
 DISTRICT FLOODWAY
 MARICOPA AND PINAL COUNTIES, ARIZONA
 SEPTEMBER 1976



APPENDIX C

LETTERS OF COMMENT RECEIVED

ON

DRAFT ENVIRONMENTAL IMPACT STATEMENT

NOTE: Page and paragraph numbers found in Appendix C refer to the Interagency Draft Environmental Impact Statement and not this Final Statement.



UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF THE SECRETARY

WASHINGTON, D.C. 20250

SEP 7 1977

OFFICE OF EQUAL OPPORTUNITY

IN REPLY 8140 Supplement 8

REFER TO:

SUBJECT: Draft Environmental Impact Statement for the Roosevelt
Water Conservation District Floodway, Arizona


TO: Thomas G. Rockenbaugh
State Conservationist

THRU: Verne M. Bathurst, Deputy Administrator
for Management, Soil Conservation Service

The Draft Environmental Impact Statement (EIS) for the Roosevelt Water Conservation District Floodway was reviewed by this office to assess the civil rights impact for the socio-economic effects on minority persons living in or near the affected area.

Census data reveals a minority population of 18.7 percent in Maricopa County and 48.5 percent in Pinal County. Based on the information included in the EIS, it is difficult to determine if the proposed project will affect the civil rights of the concerned minorities, either positively or negatively.

We recommend that you include in your final statement a more detailed assessment of the effects the project will have on the minority population. This should be accomplished in accordance with Soil Conservation Service guidelines for preparing environmental impact statements (Federal Register, Vol. 39, No. 107, June 3, 1974).


JAMES FRAZIER
Director

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 82ND FLYING TRAINING WING (ATC)
WILLIAMS AIR FORCE BASE, ARIZONA 85224



23 SEP 1977

Mr Thomas G. Rockenbaugh
USDA/SCS
3008 Federal Building
Phoenix AZ 85025

Dear Mr Rockenbaugh

The Roosevelt Water Conservation District Floodway draft environmental impact statement has been reviewed by base personnel, including the base environmental protection committee. We have no comments on the statement and plan at this time.

Sincerely

A handwritten signature in blue ink, reading "Richard L. Russell", is positioned above the typed name.

RICHARD L. RUSSELL
Colonel, USAF
Base Commander



DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2711
LOS ANGELES, CALIFORNIA 90033

SPLED-E

9 September 1977

Mr. Thomas G. Rockenbaugh, State Conservationist
United States Department of Agriculture
Soil Conservation Service
Room 3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

This is in response to a letter from your office dated 15 August 1977 which requested review and comment on the draft environmental impact statement (EIS) for the Roosevelt Water Conservation District Floodway, Arizona.

The proposed plan does not conflict with existing or authorized plans of the Corps of Engineers.

With respect to the EIS, we offer the following comments:

a. Page 45, 7th paragraph: Delete the last sentence and insert the following: This study concludes that no Corps of Engineers flood control improvements west and downslope of the Roosevelt Water Conservation District Floodway are justified at this time. The results of this study are summarized in the "Summary Report for Flood Control - Gila Floodway" due for public distribution in September 1977.

b. Appendix A: the Discount Rate used should be referenced.

Thank you for the opportunity to review and comment on this draft statement.

Sincerely yours,


NORMAN ARNO
Chief, Engineering Division



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER-77/774

NOV 2 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
Department of Agriculture
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

This Department has received your letter of August 15, 1977, requesting our review and comment on the draft environmental impact statement for the Roosevelt Water Conservation District Floodway. Our review has surfaced some comments which we hope you will consider in your development of the final environmental impact statement.

General Comments

The draft environmental impact statement does not adequately address the subject of recreation and its impacts on the proposed floodway. The discussion in the Recreational Resources Section should identify parklands which would actually be affected by project implementation. If no parklands are involved, then the draft statement should say that none are involved. From a recreation standpoint, the channel right-of-way could provide a significant length of bike and riding trails. The disposal areas, once vegetated, could provide space for such facilities as picnic grounds, parcourses or adventure play areas. The statement should discuss these opportunities and assess the impacts of including recreation development alternatives.

The fact that impacts are not quantified in the alternative discussion makes it difficult to compare alternatives. In addition, there is no discussion of impacts on prime farmland.

According to the referenced 1975 report, efforts have been made to mitigate damage to archeological remains along portions of the proposed floodway right-of-way. These measures included recovery of significant archeological remains at several of the cultural resource sites recommended for inclusion in the National Register of Historic Places. The mitigation program was not discussed in the draft statement, nor was it developed in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, although a statement on page 43 indicated that such consultation would take place.

Specific Comments

Page 16: The fourth paragraph states that the excavated material from the floodway which cannot be put to a useful purpose will be placed in designated disposal areas. We feel that final selection of these disposal areas should be made in the field by a team composed of members from the Arizona Game and Fish Department, Soil Conservation Service and U.S. Fish and Wildlife Service.

Page 19, Paragraph 4: There should be a discussion of the Agency which will manage the 280 acres of replacement lands.

Page 19, Operation and Maintenance: A statement should be made to the effect that the 75-acre wildlife mitigation area upslope of the collector ditch within the floodway right-of-way be maintained without degradation from vandalism or other uses that would lower the carrying capacity of the area for wildlife.

Page 20: The management of the mitigation area by the Arizona Game and Fish Department must be spelled out in a general agreement, and not a general plan. The Fish and Wildlife Coordination Act states that a general plan is only used when Federal government land is involved.

Page 41: It is stated on page 41 that the other seven cultural resources, not recommended for inclusion in the National Register of Historic Places, are described as being significant. Possessing significant information, however, is one of the broad criteria under which properties may be eligible for inclusion. Although data recovery has already been conducted, the resources should be further evaluated, and the final statement should contain documentation that the State Historic Preservation Officer concurs with the determination.

Pages 42 and 43: In the survey report on proposed disposal areas (reference 15), it is stated that at parcels 11 and 12 significant cultural remains were located. It was suggested by the archeologist that alternative disposal locations be sought. We concur with this recommendation that, if possible, significant cultural resources should be avoided and alternative disposal areas be considered.

Page 45: The Central Arizona Project will convey an average annual supply of 1.2 million acre-feet of water to central Arizona.

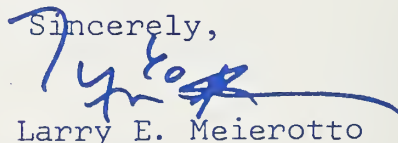
Page 58: The narrative in this section and throughout the entire statement on the "triangle" area is very superficial. A full and complete discussion of the vegetation on the triangle should be given, including total acres of each habitat type. Also, an explanation of why only 132 acres of riparian habitat are identified as being adversely affected and requiring mitigation when, in fact, a total of about 1,300 acres will be lost or degraded. The discussion should also include a description of present land use and future planning of the Gila River Indian Community for the triangle.

Page 61: In a discussion of probable impacts, it is stated that 14 cultural resources were identified and "items of significance will be salvaged before and during construction" (emphasis added). In order to avoid undue project delays, data recovery should be conducted prior to initiation of construction activity. Additionally, the section dealing with environmental impacts in the final statement should also discuss cultural resources that were located in the disposal areas.

Page 75: Reference No. 11 should read "Endangered and Threatened Wildlife of the United States."

We hope these comments will be helpful to you.

Sincerely,



Larry E. Meierotto

Deputy Assistant SECRETARY

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Phoenix District Office
2929 West Clarendon Avenue
Phoenix, Arizona 85017

October 12, 1977

Mr. Thomas G. Rockenbaugh, State Conservationist
Soil Conservation Service
3008 Federal Building
Phoenix, AZ 85025

Dear Mr. Rockenbaugh:

We have reviewed the draft environmental impact statement for the Roosevelt Water Conservation District Floodway and offer the following comments:

- page 18 - Third paragraph - Does not state whether intensive surveys have been performed. What are "archaeological reconnaissance surveys"?
- page 19 - Second paragraph - Indicates 410 acres and 1,650 annual habitat units will be lost. These losses are not shown as such on page 64.
- page 41 - Last paragraph - What are "negative archaeological remains"?
- pages 65-69 - Under "Alternatives" - The archaeological/cultural impacts are not carried through alternatives.
- page 70 - Under "Short Term vs. Long Term Use" - First paragraph - The 0.4 percent should be clarified on how it was derived.
- page 73 - Under "Commitment of Resources" - There is no mention of the archaeological resources.

Thank you for the opportunity to comment.

Sincerely yours,

Ray E. Bauer
Acting District Manager





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

100 CALIFORNIA STREET
SAN FRANCISCO, CALIFORNIA 94111

OCT 14 1977

D-SCS-K36023-AZ

Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service
Room 3008, Federal Building
230 North First Avenue
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Environmental Protection Agency has received and reviewed the draft environmental statement for the Roosevelt Water Conservation District Floodway, Arizona.

EPA's comments on the draft environmental statement have been classified as Category LO-2. Definitions of the categories are provided on the enclosure. The classification and the date of EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

EPA appreciates the opportunity to comment on this draft environmental statement and requests one copy of the final environmental statement when available.

Sincerely,

David L. Colburn

for Paul De Falco, Jr.
Regional Administrator

Enclosure

cc: Council on Environmental Quality

DEIS - Roosevelt Water Conservation District Floodway

The over-all project concept is sound but the DEIS needs considerably more work to satisfy EIS/NEPA requirements.

1. Other Planning

The FEIS should be coordinated and comments elicited from both the on-going Maricopa Association of Governments and Central Arizona Association of Government's 208 Water Quality Management Plan studies. It should be noted that population projections are currently available for the communities within the Phoenix Metropolitan area and the unincorporated community of Apache Junction from these studies.

Lower Queen Creek Watershed Project

Please indicate the timeframe for construction of the proposed Queen Creek project, as the DEIS has stated that the proposed floodway would be subject to flooding by the 30 year flood without this project.

1. Gila Floodway Survey Report

What is the status of the Gila Floodway Survey Report by the U.S. Army Corps of Engineers that was due for completion by August 1977? The relevant portions of this report should be incorporated into the FEIS.

2. Water Quality Urban Sewage Treatment

The reference to urban sewage being "normally put in individual septic tanks" is inaccurate. Williams AFB, Chandler, Gilbert, and Mesa all have sewage treatment plants. The FEIS should correct these errors.

Water Supply

Diverting floodwaters from the flood-prone areas to the proposed RWCD floodway will increase groundwater recharge by 1300 acre/feet per year. How will this affect groundwater recharge, percolation rates, and the diminishing water supply in the flood-prone areas?

2. Gila River

There will be increased flow, bedload and suspended sediment transported to the Gila River due to construction of the proposed project. Sediment in suspension transported to the Gila River will increase by approximately 50% due to the project. Also, there will be associated increases in pesticides and nutrient loading from fertilizers and animal wastes due to the project. The present beneficial uses of the Gila River and the impacts associated with construction of the RWCD floodway needs to be assessed in the FEIS.

Impacts of uncontrolled floodwaters to the Gila River now versus the proposed RWCD floodway conveyance of floodwaters to the river needs to be discussed in the FEIS.

3. Pages 6, 7, 12, 22, 28, 29, 45, 47, 48, 49

The proposed RWCD floodway is referenced throughout the DEIS in the present tense. This has led to much confusion in distinguishing present flood retarding structures from the proposed project while reviewing the DEIS.

Also, is there an existing floodway? How does the existing floodway and the existing irrigation canal relate to construction of the new floodway? This is particularly significant if the proposed floodway is to run an almost parallel course with the existing canal and floodway.

4. Project Costs

The project financing needs clarification as total project costs have been stated as \$29,841,300 with \$17,704,300 from PL 566 funds and \$6,220,500 from "other funds." What is the source of these "other funds"? Also, \$5,916,500 remains to be funded. How will this amount be financed?

5. Land Use

The DEIS has not adequately discussed land use changes due to construction of the RWCD floodway. For example, will the project encourage further conversion of prime agricultural lands to urbanized uses? Will there be related air quality impacts due to urbanization? Will there be associated impacts on accessibility to areas presently designated for recreational uses?

6. Wildlife

The DEIS does not adequately address the project's impacts on the area's wildlife. This is particularly significant due to the possible presence of three endangered wildlife species.

7. Definitions

What is meant by "land capability classes for dry land soils" I-8? Also, what is a "type 5 irrigation tail water pond"?

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

August 29, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

This is in response to your request of August 15, 1977, for comments on the draft environmental statement (DES) for the Roosevelt Water Conservation District Floodway, Maricopa and Pinal Counties, Arizona. We have reviewed the DES and note that the undertaking will affect several archeological sites that may be eligible for inclusion in the National Register of Historic Places. However, we also note that the Soil Conservation Service appears aware of its responsibility pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. 470f, as amended, 90 Stat. 1320) with respect to the proposed undertaking. Accordingly, we look forward to working with SCS in accordance with the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800) at the appropriate time.

Nevertheless, until the requirements of Section 106 are met, the Council considers the DES incomplete in its treatment of historical, archeological, architectural and cultural resources. To remedy this deficiency, the Council will provide, in accordance with its "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800), substantive comments on the effect of the undertaking on these properties. Please call Michael H. Bureman at (303) 234-4946 to assist you in completing this process.

Sincerely yours,



Louis S. Wall
Assistant Director, Office of
Review and Compliance

WILLIAM H. WHEELER, CH.
PETER F. BIANCO, V. CH.
WESLEY E. STEINER
EXECUTIVE DIRECTOR
AND
STATE WATER ENGINEER
VICKIE MOONEY
SECRETARY



RAUL H. CASTRO, GOVERNOR
Arizona Water Commission

222 NORTH CENTRAL AVENUE, SUITE 800

Phoenix, Arizona 85004

TELEPHONE (602) 258-~~xxx~~ 8596

MEMBERS
GLEN G. CURTIS
KEL FOX
JOHN L. LEIBER
W. N. JACK SHAWVER
J. C. WETZLER
EXOFFICIO MEMBERS
ANDREW L. BETTWY
MARSHALL HUMPHREY

August 22, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
U.S. Dept. of Agriculture
Soil Conservation Service
Federal Building, Room 3008
230 North 1st Avenue
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Environmental Impact Statement for the Roosevelt Water Conservation District Floodway which you sent to Governor Raul H. Castro has been received and forwarded to the Arizona Water Commission. The Commission will review the statement and furnish you with appropriate comments.

The opportunity to review this draft statement is appreciated.

Sincerely,

A handwritten signature in cursive script, appearing to read "W. D. Mathews".

William D. Mathews, Chief
Flood Control Branch

FEDERAL ASSISTANCE			2. Applicant's application		a. Number SCS-EIS WS-76-3-(D)-AZ		3. State application Identifier		a. Number AZ 77-80-0039		
1. Type Of <input type="checkbox"/> Preapplication Action <input checked="" type="checkbox"/> Application (Mark appropriate box) <input type="checkbox"/> Notification Of Intent (Opt.) <input type="checkbox"/> Report Of Federal Action			b. Date 19 77 8 15 Year Month Day		b. Date Year month day		Assigned 19 77 08 31				
			Leave Blank		OCT 21 1977		John Gumpblood				
4. Legal Applicant/Recipient					5. Federal Employer Identification No. 86-6000472-G						
a. Applicant Name : Flood Control District of Maricopa b. Organization Unit : County c. Street/P.O. Box : 3335 W. Durango Street d. City : Phoenix e. County : Maricopa f. State : Arizona g. Zip Code : 85009 h. Contact Person : Thomas G. Rockenbaugh, State Conservationist, SCS (261-6711) (Name & telephone no.)					6. Program (From Federal Catalog)		a. Number 1 0 0 9 0 4				
							b. Title Watershed protection and flood prevention, USDA Soil Conservation Service				
7. Title and description of applicant's project Roosevelt Water Conservation District Floodway Environmental Impact Statement. The purpose of this application is to submit a draft EIS for interagency review. Both conservation land treatment and the construction of the Roosevelt Water Conservation District Floodway are included in the proposed works of improvement for watershed protection and flood prevention. (See reverse side.)					8. Type of applicant/recipient A-State B-Interstate C-Substate District D-County E-City F-School District G-Special Purpose District H-Community Action Agency I-Higher Educational Institution J-Indian Tribe K-Other (Specify): Enter appropriate letter <input checked="" type="checkbox"/> G						
					10. Area of project impact (Names of cities, counties, states, etc.) Mesa, Chandler, and Gilbert. (Cities) Maricopa and Pinal Counties, Arizona					9. Type of assistance A-Basic Grant B-Supplemental Grant C-Loan D-Insurance E-Other Enter appropriate letter(s) <input checked="" type="checkbox"/> A	
11. Estimated number of persons benefiting 1,000,000										12. Type of application A-New B-Renewal C-Revision D-Continuation E-Augmentation Enter appropriate letter <input checked="" type="checkbox"/> A	
13. Proposed Funding					14. Congressional Districts Of:					15. Type of change For 12c or 12e	
a. Federal \$ 23,600,000.00					a. Applicant 01					A-Increase Dollars B-Decrease Dollars C-Increase Duration D-Decrease Duration E-Cancellation F-Other Specify: -	
b. Applicant 3,200,000.00					b. Project 03, 04					Enter appropriate letter(s) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
c. State 3,200,000.00					16. Project Start Date Year month day 1978					17. Project Duration 72 Months	
d. Local 0 .00					18. Estimated date to be submitted to federal agency 19 78					19. Existing federal identification number	
e. Other 0 .00											
f. Total \$ 30,000,000.00											
20. Federal agency to receive request (Name, city, state, zip code) USDA, Soil Conservation Service, 3008 Federal Bldg., Phoenix, AZ					(Zip - 85025)					21. Remarks added <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
22. The Applicant Certifies That		a. To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.					b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached.				
							(1) Arizona State Clearinghouse <input type="checkbox"/> <input type="checkbox"/> (2) Region I Clearinghouse (MAG) <input type="checkbox"/> <input checked="" type="checkbox"/> (3) Region V Clearinghouse (CAAG) <input checked="" type="checkbox"/> <input type="checkbox"/>				
23. Certifying representative		a. Typed name and title Thomas G. Rockenbaugh State Conservationist					b. Signature Thomas G. Rockenbaugh		c. Date signed Year month day 19 77 8 15		
24. Agency name							25. Application received 19				
26. Organizational Unit							27. Administrative office				
29. Address							28. Federal application identification				
31. Action taken							30. Federal grant identification				
<input type="checkbox"/> a. Awarded		32. Funding		a. Federal \$.00		33. Action date 19		34. Starting date 19			
<input type="checkbox"/> b. Rejected		b. Applicant .00				35. Contact for additional information (Name and telephone number)		36. Ending date 19			
<input type="checkbox"/> c. Returned for amendment		c. State .00						37. Remarks added			
<input type="checkbox"/> d. Deferred		d. Local .00						<input type="checkbox"/> Yes <input type="checkbox"/> No			
<input type="checkbox"/> e. Withdrawn		e. Other .00									
		f. Total \$.00									
38. Federal agency A-95 action		a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.					b. Federal Agency A-95 Official (Name and telephone number)				

Section I - 7 - The primary structural measure is the Roosevelt Water Conservation District Floodway. This floodway is for flood control purposes and traverses three watersheds, which are Buckhorn-Mesa (SAI 76800047), Apache Junction-Gilbert (SAI), and Williams-Chandler (SAI 76600059). This program EIS reflects the environmental impacts in these watersheds which result from the construction of this 27-mile long floodway which outlets into the Gila River.

Arizona Bureau of Geology &
Mineral Technology
University of Arizona
Tucson, Arizona 85721

State Application Identifier (SAI)

NOV 10 1977

State AZ No. 77-60-004

from: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Power
Indian Affairs	Game & Fish
Mineral Res.	Ag. & Hort.
Transportation	Health
Az. Mining Ass'n	Water
Arid Lands Studies	Land
Parks	AORCC
Environmental Studies	
Archaeological Research	
SW Minerals Exploration	
Center for Public Affairs	
Prescott Historical Society	
Renewable Natural Resources	
Public Safety	
Az. Bureau of Geology & Mineral Tech	
OEPAD: R. Kingery	
J. Rich	

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Region I
Region V

also return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above
also contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)



Viewer's Signature: [Signature]

Date: 11/17/77

Director

Telephone: 844-1943

Mr. James R. Carter, Director
Agriculture & Horticulture Dept.
421 Capitol Annex West
Phoenix, Arizona 85007

AUG 31 1977

State AZ No. 77-80-0039

re: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec. Health
Mineral Resources Power
Indian Affairs Ag. & Hort.
Game & Fish Water
Transportation Land
Bureau of Mines Parks
Az. Mining Ass'n AORCC
Arid Lands Studies
Environmental Studies
Archaeological Research
Renewable Natural Resources
SW Minerals Exploration
OEPAD - J. Rich
U of A College of Agriculture
Region I
Region V

RECEIVED

SEP 1 - 1977

ARIZONA COMMISSION OF
AGRICULTURE & HORTICULTURE

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

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Please contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

James R. Carter

Date 9-2-77

C-18

Telephone 271-4373

Dr. [redacted] Condy, Director
Department of Health Services
1740 West Adams Street
Phoenix, Arizona 85007

State Application Identifier (SAI)

NOV 10 1977

State AZ

No. 77-60-0043

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec. Power
Indian Affairs Game & Fish
Mineral Res. Ag. & Hort.
Transportation Health
Az. Mining Ass'n Water
Arid Lands Studies Land
Parks AORCC
Environmental Studies
Archaeological Research
SW Minerals Exploration
Center for Public Affairs
Prescott Historical Society
Renewable Natural Resources
Public Safety
Az. Bureau of Geology & Mineral Tech
OEPAD: R. Kingery
J. Rich

Region I
Region V

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- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature:

R. Bruce Scott

Date

NOV 21 1977

Vernon L. Hoy, Director
Dept. of Public Safety
P.O. Box 6638
Phoenix, Az 85005

State Application Identifier (SAI)

NOV 10 1977

State AZ No. 77-60-004

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Power
Indian Affairs	Game & Fish
Mineral Res.	Ag. & Hort.
Transportation	Health
Az. Mining Ass'n	Water
Arid Lands Studies	Land
Parks	AORCC
Environmental Studies	
Archaeological Research	
SW Minerals Exploration	
Center for Public Affairs	
Prescott Historical Society	
Renewable Natural Resources	
Public Safety	
Az. Bureau of Geology & Mineral Tec	
OEPAD: R. Kingery	
J. Rich	

Region I
Region V

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- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☒ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

[Handwritten Signature]

Date 11/3/77

Program Evaluation Section
Transportation Planning Division
Arizona Dept. of Transportation
06 South 17th Avenue, Room 310
Phoenix, Arizona 85007

State Application Identifier (S-AI)

AUG 31 1977

State AZ

No.

77-80-003

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

This project is referred to you for review and comment. Please evaluate as to:

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- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

Comments: (Use additional sheets if necessary)

Page 13; paragraph 5:

Any consideration given to reducing channel width at State Highway crossings?

R. Demetri, Highway Plans Services

Page 12: Paragraph 6:

Please coordinate floodway design with existing and anticipated transportation facilities and expansion of those facilities. To (a) the year 2000 and (b) as the facilities are expanded to meet urban growth demands.

ADOT design coordination should be acquired for crossings as indicated on map Appendix B; State Routes 93, 87 and 360, US Routes 60, 80 and 89. None of your maps indicate the location of State Route 360 which traverses your flood control work area.

Reviewer's Signature

Donald D. McCarty

Date

SEP 12 1977

C-21

Telephone

261-7251

Mr. Robert Jantzen, Director
Game and Fish Dept.

2222 W. Greenway
Phoenix, Arizona 85023

Y AUG 31 1977

State AZ No. 77-80-0039

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☐ Proposal is supported as written

☒ Comments as indicated below **ATTACHED**

Comments: (Use additional sheets if necessary)

Reviewer's Signature

Date

Sept. 22, 1977

Title

Telephone

942-3000

C-22

Commissioners:

HARLES F. ROBERTS, O.D., Bisbee Chairman
FRANK FERGUSON, JR., Yuma
WILTON G. EVANS, Flagstaff
GENE TOLLE, Phoenix
WILLIAM H. BEERS, Prescott,
Director
ROBERT A. JANTZEN



ARIZONA GAME & FISH DEPARTMENT

2222 West Greenway Road Phoenix, Arizona 85023 942-3000

Asst. Director, Operations
PHIL M. COSPER

Asst. Director, Services
ROGER J. GRUENEWALL

September 29, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service
Room 3008 Federal Building
230 N. First Avenue
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Arizona Game and Fish Department has reviewed the Draft Environmental Statement for the Roosevelt Water Conservation District Floodway (August 1977) prepared by the Soil Conservation Service. We would like to offer the following comments.

On December 15, 1976, we sent you our comments on your pre-draft statement for the above project. You have utilized several of our suggestions. However, several were not used and we feel that they are important enough to repeat since they still apply to this draft statement.

We still believe there should be further clarification of habitat losses to be incurred as a result of the project. Also, an historic account of the "triangle" area which is bounded by State Highway 87 and 93 would be beneficial for a more complete understanding of project effects on wildlife habitat.

Further, there is still no mention made of the probable decline of the habitat west of Highway 93 which also includes mesic vegetation maintained in an arid area as a result of the current location of the terminus to the existing RWCD Floodway. We suggested previously, and still believe, there is a need for additional explanation and details concerning the losses of these habitats. Such detail would be most valuable if it included maps and a tabular representation of "with" and "without" project effects on the vegetation of this area.

The "new" draft statement tends to downgrade the quality of the wildlife habitat lost and does have figures much less than originally displayed. We understand the reasoning for the reduced figures, in that it is presumed these lands will be cleared for agricultural purposes even without this project. The fact remains that there are 2,240 acres of native vegetation at the present floodway outlet of which 1,300 acres represent desert riparian vegetation as reported in the "team" biologist report.

September 29, 1977

We point this out, because we firmly believe the area downstream from the present floodway outlet is very important wildlife habitat. This area is one of the better dove producing areas and provides some of the best dove hunting in the state. We feel the environmental statement should reflect this.


Through the various coordination meetings this agency, the Fish and Wildlife Service and the Soil Conservation Service have discussed mitigation for the wildlife losses incurred as a result of the project. We have generally agreed that the 280-acre parcel, or its equivalent, along the Gila River near the Robbins Butte Wildlife Area was adequate. The draft statement, however, makes no mention of the recommendation for fencing this property to protect it from grazing and woodcutters. Without this protection, the value of the mitigation lands would be decreased and not equal to the projected habitat units credited for mitigation.

Although this project will have detrimental effects on the wildlife resources, we believe the mitigation proposals adequately compensate for these losses. We therefore can support the proposal as outlined in the draft statement.

Thank you for the opportunity to provide you with these comments.

Sincerely,

Robert A. Jantzen, Director

By:  John N. Carr, Supervisor
Planning & Evaluation Branch

JNC:dd

cc: Don Metz, USFWS
State Clearinghouse (77-80-0039)
Bud Bassett, AGFD

Mr. Roger Root, Acting Chief
Office of Planning
Dept. of Econ. Security
1717 W. Jefferson
Phoenix, Ariz. 85007

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-003

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted ab.
Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

RECEIVED

SEP 1 1977

SPECIAL PROGRAMS BUREAU

Reviewer's Signature

Stella Crawford DCS/PSA

C-25

Date

9/6/77

Title

Telephone

(602) 271-4111

Mr. Les Ormsby, Admin.
Arizona Power Authority
1810 West Adams Street
Phoenix, Arizona 85005

AUG 31 1977

State AZ No. 77-80-0039

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
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Arid Lands Studies	
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SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	
	Region I
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- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature Y T Ormsby

Date 9-6-77

Mr. Andrew L. Bettwy
Comm., Department of Land
1624 W. Adams St., 4th Floor
Phoenix, Arizona 85007

State Application, number (SAI)

AUG 31 1977

State AZ No. 77-80-0039

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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☒ Comments as indicated below

Comments: (Use additional sheets if necessary)



Copy of Response attached.

Reviewer's Signature

Kelly R. Johnson

C-27

Date 9-26-77

Administrator, Office of Natural Resource Conservation

Telephone 271-4633



BAUL H. CASTRO
GOVERNOR

Arizona
State Land Department

1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 271-4634



OFFICE OF
STATE LAND COMMISSIONER

September 22, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Arizona State Land Department acknowledges receipt of the draft E.I.S. Roosevelt Water Conservation District Floodway (RWCD) as prepared by the U.S.D.A., Soil Conservation Service.

A review of the Department's records indicates the following described Trust lands lie in the vicinity of the proposed Floodway:

N $\frac{1}{2}$ SE $\frac{1}{4}$, Section 16, T1S, R7E lies approximately one mile east of the proposed Floodway and should receive no adverse impact from the proposal.

SE $\frac{1}{4}$ of Section 17, T1S, R7E lies approximately 1 $\frac{1}{2}$ miles east of the proposed Floodway and should receive no adverse impact from the proposal.


Part of the S $\frac{1}{2}$ lying west of canal, Section 19, T1S, R7E lies adjacent to the proposed Floodway on the downstream side. The protection offered by the project would certainly protect this parcel of trust land.

The State Land Department supports the proposed project as it will serve to protect the community as well as Trust lands of the State.

The Department appreciates the opportunity to comment on this proposal and if we can be of any assistance, please do not hesitate to contact us.

Sincerely,

Andrew L. Bettwy
State Land Commissioner

By: 

Kelly R. Johnson, Administrator
Office of Natural Resource Conservation

KRJ:fmr

Dr. R. Gwinn Vivian
Arizona State Archaeologist
Arizona State Museum
Tucson, AZ 85721

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-0031

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	
	Region I
	Region V

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☒ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

Sharon J. Urban

Date September 12, 1977

Title Assistant Archaeologist

C-29

Telephone 884-4139



ARIZONA STATE MUSEUM

THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

August 25, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
United States Department of Agriculture
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

Your letter of August 15th requesting comments on the "Draft Environmental Impact Statement, Roosevelt Water Conservation District Floodway, Arizona" has been received. Comments on the section entitled "Archeological, Historical, and Unique Scenic Resources" follow.

The report is no doubt a condensed version of several more inclusive ones. It has been well assembled and offers the basic facts required of an EIS. You are aware of necessary preservation for cultural resources including proper mitigation procedures. The final paragraph indicating federal laws to be followed, joint cooperation with National Park Service, State Historic Preservation Officer, and a professional archaeologist are highly recommended and encouraged.

Thank you for the opportunity to comment on this report.

Sincerely,

Sharon F. Urban (Miss)
Assistant Archaeologist

SFU:sr

TO: Thomas G. Rockenbaugh, State Conservationist, Soil Conservation Service, U.S. Dept. of Agriculture, 3008 Federal Building, Phoenix, Arizona 85025

FROM: Natural & Cultural Resource Conservation Section
Arizona State Parks
1688 West Adams Street
Phoenix, Arizona 85007
(602) 271-4174

PROJECT: Roosevelt Water Conservation
District Floodway
DOA-SCS

Statement of the State Historic Preservation Officer concerning the eligibility of a property for inclusion in the National Register of Historic Places.

I understand that the Soil Conservation Service is requesting the opinion of the State Historic Preservation Officer concerning the eligibility of the 42 inventoried archaeological sites* located in the project area for inclusion in the National Register of Historic Places and that my opinion may be submitted to the Secretary of the Interior with a formal request for a determination of eligibility on this property. This statement confirms my consultation as part of the determination of eligibility procedures.

- ☒ (as an archeological district)
In my opinion, the property is eligible for inclusion in the National Register.
- ☐ In my opinion, the property is not eligible for inclusion in the National Register.
- ☐ I have no opinion and prefer to defer to the opinion of the Secretary of the Interior.
- ☐ Proceed according to Guidelines for Making "Adverse Effect" and "No Adverse Effect" Determinations for Archaeological Resources in accordance with 36 C.F.R. Part 800.
- ☐ In my opinion, the Advisory Council on Historic Preservation criteria for making a determination of "No Adverse Effect" for archaeological resources have been met.
- ☐ In my opinion, it has been demonstrated that the Advisory Council on Historic Preservation data recovery requirements for archaeological resources are to be met.

*as listed in the Archaeological Management Program report by Glen Rice (ASU), dated December 1977.

Signed: Courtney H. Hall
State Historic Preservation Officer

Date: 1-30-78

FROM: Natural & Cultural Resource Conservation Section
Arizona State Parks
1688 West Adams Street
Phoenix, Arizona 85007
(602) 271-4174

PROJECT: Roosevelt Water Conservation District Floodway Project
Cultural Resource Mitigation Proposal
DOA-SCS

I have reviewed this project and offer the following comments:

- ☐ There are Inventory/Register properties in/near the project area as described in the enclosed comments.
- ☐ An opinion of eligibility for inclusion in the National Register of Historic Places is enclosed.

This project will have:

- ☐ An apparent positive effect on cultural resources.
- ☐ No effect on cultural resources.
- ☒ No apparent adverse effect on cultural resources. *(See Additional Comments)*
~~However,~~
 - ☐ The State Historic Preservation Officer and/or the State Archaeologist (Arizona State Museum) should be notified if cultural resources are discovered during construction.
 - ☐ An archaeologist should monitor the project during construction.
 - ☐ Existing buildings/structures on the site should be recorded through photographs and/or drawings.
 - ☐ An archaeological clearance survey is requested.
- ☐ A Potential adverse effect on cultural resources. Therefore,
 - ☐ An archaeological clearance survey is requested because of known sites and/or properties in the area.
 - ☐ An archaeologist should monitor the project during construction.
 - ☐ The impact on existing buildings/structures should be evaluated.
On the site. To be vacated if this project is undertaken.
- ☐ An adverse effect on cultural resources included on/or eligible for inclusion on the National Register of Historic Places. Please seek Advisory Council on Historic Preservation comments and prepare a preliminary case report.
- ☐ The effect on cultural resources cannot be determined. Please submit information requested in the enclosed comments.
- ☒ Additional comments are enclosed.

Donalyn H. Hall
State Historic Preservation Officer

3-20-78
Date

ADDITIONAL COMMENTS

RE: Roosevelt Water Conservation
District Floodway Project
Cultural Resource Mitigation
Proposal
DOA-SCS

After reviewing the report by Glen Rice (ASU) entitled "An Archaeological Management Program for the Roosevelt Water Conservation District Floodway" (dated 12/77), it is my opinion that implementation of this proposed plan of archaeological testing and data recovery will allow for a "no adverse effect" determination to be made regarding the effects this project would have on identified cultural resources. The proposed phased testing-data recovery program, if implemented, should mitigate any potential adverse effects to existing cultural resources and, in addition, will provide the additional data needed for a more refined evaluation and selection of those sites which might be nominated for inclusion in the National Register of Historic Places. I have already expressed the opinion that collectively the archaeological sites identified for this project appear to meet the criteria of eligibility for inclusion in the National Register as a district. The new information generated from implementing this testing-data recovery program will be important in helping to determine what continued course of action will be best to protect and preserve the values of these archaeological sites.

Therefore, I support a "no adverse effect" determination pursuant to the Advisory Council's Guidelines for Making "Adverse Effect" and "No Adverse Effect" Determinations for Archaeological Resources in Accordance with 36 C.F.R. Part 800.

Michael A. Ramnes, Director
Arizona State Parks Board
1688 W. Adams Room 109
Phoenix, Arizona 85007

State Application includes:

AUG 31 1977

State AZ No. 77-80-0039

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

A project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
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- (4) additional considerations

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so contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

viewer's Signature

Allen W. G. 10/8/77

Date

9.8.77

C-34

2714174

Mr. Wesley E. Steiner,
State Water Commission
222 N. Central Ave., Suite 800
Phoenix, Arizona 85004
From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

AUG 31 1977

State AZ No. 77-80-0036

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

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- ☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

Comments: (Use additional sheets if necessary)

See attached letter

Reviewer's Signature Wesley E. Steiner

Date 10-3-77

Title Planner

C-35

Telephone 258-7561

WILLIAM H. WHEELER, CH.
PETER F. BIANCO, V. CH.
WESLEY E. STEINER
EXECUTIVE DIRECTOR
AND
STATE WATER ENGINEER
VICKIE MOONEY
SECRETARY



RAUL H. CASTRO, GOVERNOR
Arizona Water Commission

222 NORTH CENTRAL AVENUE, SUITE 800

Phoenix, Arizona 85004

TELEPHONE (602) 258-7581

MEMBERS
GLEN G. CURTIS
KEL FOX
JOHN L. LEIBER
W. N. JACK SHAWVER
J. C. WETZLER

EXOFFICIO MEMBERS
ANDREW L. BETTWEY
MARSHALL HUMPHREY

September 30, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
U.S. Dept. of Agriculture
Soil Conservation Service
3008 Federal Building
230 North 1st Avenue
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Arizona Water Commission has received and reviewed the draft environmental impact statement for the Roosevelt Water Conservation District Floodway.

The document is well prepared and realistically presents the environmental impact of the proposed project. In general we concur with the conclusions reached and have only these few minor comments:

1. Page 13, 1st paragraph, lines 4 and 5 - "(4) Achieving additional control of floodwaters within the Lower Queen Creek Watershed."

The use of the term "additional control" is vague and could be replaced with a more specific description, such as referring to a 100-year level of control.

2. Page 27, 2nd paragraph, lines 20-21 - "The Granite Reef Dam is located in the northern portion of the Project area. Water is diverted into three canals; the Roosevelt Water Conservation District canal, the Eastern Canal, and the Consolidated Canal East Branch."

It may be worthwhile to note that water is first diverted into the Southern Canal and then into the three sub-canals stated.

3. Page 31, 2nd paragraph, line 15 - "non-white"
Page 33, 1st paragraph, line 5 - "minority"

It appears that the terms "non-white" and "minority" are used

Sept. 30, 1977

interchangeably. Mexican-Americans are classified as a minority but not as a non-white. If the classification of non-white was incorrectly assumed to include Mexican-American then the statement "fifty percent of the non-white residents are Negro" would be incorrect since it appears that most of the minorities in the project area are Mexican-American.

4. Page 47 - "Floodwater Damage"

Specific types of damages from the 1954 flood are discussed; however the locations and concentration of these damages are not presented. If there were no specific concentrations and the flooded areas were dispersed equally among the watersheds, this information should be stated.

5. Page 48, 7th paragraph, lines 38-40 - "About 17 acre-feet (25,000 tons) of sediment from the RWCD Floodway area reach of the Gila River annually under present conditions."

If the sentence is to read correctly the word "of" should be omitted.

6. Page 51, 4th paragraph, lines 16-19 - "The problems associated with this area is not one of providing additional wildlife habitat but of retaining some remnant of existing habitat in the face of urbanization."

The term "some remnant of" is an emotional or judgmental phrase and, without quantification, should be omitted.

7. Page 56, 1st paragraph, lines 1-6

The sediment concentrations discussed were primarily based on samples taken from irrigation flows released from San Carlos Reservoir to be diverted at the Ashurst-Hayden Diversion Dam. Only larger flood flows will overflow the diversion structure and have a downstream impact. The sediment concentration for these larger flood flows will be substantially greater than the average concentrations presented.

The opportunity to review this draft statement is appreciated.

Sincerely,

Wesley E. Steiner /fca

Wesley E. Steiner
Executive Director

Dr. James Becker
Center for Public Affairs
Arizona State University
Tempe, Arizona 85281

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-0039

om: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
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OEPAD - J. Rich	
U of A College of Agriculture	Region I
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- ☐ No comment on this project
☐ Proposal is supported as written
☒ Comments as indicated below

omments: (Use additional sheets if necessary) 1. There is no presentation of the reaction of the Pimas on the Gila River, to this arrangement; nor of arrangements to assure continuity of assurance of delivery and/or acceptance of the water. 2. The mitigation of water pollutants received now by the Pimas from upland sources is not a project benefit, since such pollution is to be terminated by its originator. 3. Aggregates are given for costs and benefits: more detail is needed. 4. No information is given on flooding increase to be caused by urbanization in the protected area. Erosion, scour, and sedimentation benefits downstream in the project area protected are offset by the same events occurring on the Gila Reservation. Construction and O&M employment is not a project benefit. 5. There is no projection of future benefits and costs: if future benefits increase, then these beneficiaries are better able to pay any costs of projects preferred by them. The separation of costs and benefits is not discussed. 6. Recharge, listed as a benefit, is not detailed in the report. 7. The benefit of improved living, mentioned, is not supported in the report.

viewer's

J. L. Becker

C-38

Public Affairs

Date 9-13-77

Telephone

Central Az. Ass'n of Gov'ts.
512 E. Butte Avenue
Florence, Arizona 85232

State Application Number (SAS)

AUG 31 1977

State AZ No. 77-80-0039

Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
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U of A College of Agriculture	
Region I	
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Comments: (Use additional sheets if necessary)

The study appears to ignore the potential damage to an additional 10,000 acres which will be flooded on the Gila River (Page 64) in its evaluation of the cost effectiveness of the project. These costs - when properly considered would very likely make the entire project cost ineffective.

In addition, assumption in the report that rapid urbanization will occur in the flood area goes against any valid concept of land use planning. Arizona has room for growth in areas that are not flood prone.

Recommend additional study on this project.

viewer's Signature

D.M. Childs

C-39

Date Oct 14, 1977

Dr. Roger Caldwell, Dir.
Council for Enviro. Studies
U of A College of Agri.
Tucson, Arizona 85721

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-003

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
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Transportation	Land
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OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

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☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

Roger Caldwell

Date

9-12-77

Title

Director, Council for Env. Studies

Telephone

884-35

Mr. Clinton M. Pattea
Executive Secretary
Indian Affairs Commission
1645 West Jefferson St.
Phoenix, AZ 85007

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-0039

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
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- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

C-41
Clinton M. Pattea

Date 9-2-77

John J. DeBolske, Exec. Dir.
Maricopa Ass'n of Governments
1820 W. Washington Street
Phoenix, AZ 85007

State Application Identifier (SAI)

AUG 31 1977

State AZ No. 77-80-0039

0908

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
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OEPAD - J. Rich	
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- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

[Signature]
S. A. R.

C-42

Date

9/6/77

Telephone



MARICOPA ASSOCIATION OF GOVERNMENTS
320 WEST WASHINGTON PHOENIX, ARIZONA 85007 (602) 254-6308

September 2, 1977

TO: Mr. Ken Fooks, Hohokam RC&D

FROM: Clearinghouse Staff Contact: Ken Driggs

SUBJECT: Project Notification and Review

Applicant: Flood Control District of Maricopa County

Project Title: Roosevelt Water Conservation District Floodway - EIS

State Application Identifier: 77-80-0039

MAG Log Number: 0908

A copy of an A-95 application form AZ-189 along with supporting project documentation is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Please return ONLY THIS completed form within fifteen (15) days of your receipt of this request.



No comment on the above project.



Proposal is supported as written.



Project is unfavorable. (Reason stated below)



Comments are attached.

Please contact the Applicant and advise the Clearinghouse should you desire a conference with the Applicant, further information, or need additional time for review.

Kenneth G. Fooks
Authorized Representative

Hohokam RC&D
Agency

Mr. John Jett, Director
Mineral Resources Department
Fairgrounds, Mineral Building
1826 West McDowell Road
Phoenix Arizona 85007

State Application (SAS)

AUG 31 1977

State AZ No. 77-80-003

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007



Economic Sec.	Health
Mineral Resources	Power
Indian Affairs	Ag. & Hort.
Game & Fish	Water
Transportation	Land
Bureau of Mines	Parks
Az. Mining Ass'n	AORCC
Arid Lands Studies	
Environmental Studies	
Archaeological Research	
Renewable Natural Resources	
SW Minerals Exploration	
OEPAD - J. Rich	
U of A College of Agriculture	Region I
	Region V

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted above.
Please contact the clearinghouse if you need further information or additional time for review.

- ☐ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

John H. Jett

Date

8-2-76

C-44

271-379

Dr. Kenneth Kimsey, Director
Prescott Historical Society
415 West Gurley Street
Prescott, AZ 86301

State Application Form (Rev. 1-67)

NOV 10 1977

State

AZ

No.

77-60-001

From: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Economic Sec. Power
Indian Affairs Game & Fish
Mineral Res. Ag. & Hort.
Transportation Health
Az. Mining Ass'n Water
Arid Lands Studies Land
Parks AORCC
Environmental Studies
Archaeological Research
SW Minerals Exploration
Center for Public Affairs
Prescott Historical Society
Renewable Natural Resources
Public Safety
Az. Bureau of Geology & Mineral Te.
OEPAD: R. Kingery
J. Rich

Region I
Region V

This project is referred to you for review and comment. Please evaluate as to:

- (1) the program's effect upon the plans and programs of your agency
- (2) the importance of its contribution to State and/or areawide goals and objectives
- (3) its accord with any applicable law, order or regulation with which you are familiar
- (4) additional considerations

Please return THIS FORM AND ONE XEROX COPY to the clearinghouse no later than 17 working days from the date noted at
Please contact the clearinghouse if you need further information or additional time for review.

- ☒ No comment on this project
☐ Proposal is supported as written
☐ Comments as indicated below

Comments: (Use additional sheets if necessary)

Reviewer's Signature

Date

C-45

445-312



Municipal Building

City of Chandler

OFFICE OF THE MAYOR

*200 E. Commonwealth Avenue
Chandler, Arizona 85224*

August 23, 1977

Mr. Thomas C. Rockenbaugh
Soil Conservation Service
U.S. Department of Agriculture
3009 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

We are in receipt of and have reviewed the draft environmental impact statement for the Roosevelt Water Conservation District Floodway as requested.

The only comment offered, other than general concurrence with the draft, relates to "Nonstructural Measures" under the "Planned Project" section. Like Mesa, the City of Chandler has adopted regulations that require developers to make provisions in all new subdivisions, commercial and industrial projects to store on-site runoff. The amount required to be stored for a minimum of 24 hours is the runoff from a 50-year, 24-hour storm.

Respectfully,

Kenneth Thomas
Mayor

KT:cd
cc: City Manager



FLOOD CONTROL DISTRICT

of

Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

BOARD of DIRECTORS
Hawley Atkinson, Chairman
George L. Campbell
Bob Corbin
Henry H. Haws
Ed Pastor

Herbert P. Donald, Chief Engineer and General Manager

October 12, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
Soil Conservation Service
230 North First Avenue
Phoenix, Arizona 85025

Re: RWCD Floodway - Draft Environmental Impact Statement

Dear Mr. Rockenbaugh:

The Flood Control District has reviewed the aforementioned document and our comments follow:

Structural Measures (Page 12). This section of the Environmental Impact Statement indicates that considerable landscaping will be installed in various reaches of the Project and that irrigation will be required. It should be pointed out that a source of water for irrigation purposes is not available and, if irrigation is to be a part of the Project, a source of water must be developed. Also, the EIS indicates that spoil-disposal areas and the Floodway Channel itself will be seeded and irrigated. This office is of the opinion that to irrigate the approximate 27 miles of this Channel is infeasible both from a cost point of view and a nonavailability of a source of water.

Page 18 of the EIS states that an internal drainage system will be developed upslope of the Floodway. A plan for the upslope drainage system has not been developed and it is not clear who would design, construct and maintain such a drainage system. It is suggested that all reference to this drainage system be deleted from the EIS.

The Draft EIS does not include fencing the Project right-of-way. This office concurs that fencing is not required; however, fencing of certain structures for security reasons may be advisable. This requirement may be deleted during design of the Channel.

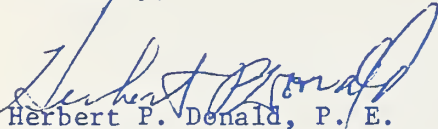
Mr. Thomas G. Rockenbaugh
October 12, 1977
Page 2

Wildlife Habitat Measures (Page 18). The Flood Control District recognizes the need of mitigation for wildlife habitat on this Project. However, mitigation requirements as are stated in the Draft EIS are based on 1975 and 1976 land uses and land development in the area may alter habitat conditions prior to Floodway construction. In view of this we suggest the following statement be included in the final EIS and Supplements. "Final mitigation requirements are to be determined by construction phase when a construction contract is advertised for that phase. Offsite mitigation may be undertaken in the first phase with any reduction in the 280 acre present requirement used as mitigation for future projects."

Operation and Maintenance (Page 19). We suggest the following statement be included in this section. "The sponsor will work with the Soil Conservation Service during the design of this project to ensure that design contributes to efficient and economical operation and maintenance practices."

Enclosure One provides additional comments on the EIS, the Apache Junction-Gilbert Supplemental Watershed Plan Agreement #2 and the Supplemental Watershed Plan and, also, on the Williams-Chandler Supplemental Watershed Plan Agreement #2 and Supplemental Watershed Plan #2. Comments on the above documents are largely of an editorial nature.

Sincerely,



Herbert P. Donald, P. E.
Chief Engineer and General Manager

Enclosure

ENVIRONMENTAL IMPACT STATEMENT

Page 1 - Last Paragraph

Delete last sentence.

Page 6 - Paragraph 6

"Maricopa County Flood Control District" should read
"the Flood Control District of Maricopa County".

Page 16 - Paragraph 5

Change last sentence to read as follows: "Where land is purchased by the Sponsors, the land may be made available for public or private use or may be sold at the option of the local Sponsors".

Page 17 - Paragraph 1

After first sentence insert: "Soil Conservation Service has considered spoil disposal site requirements. Conceptually, the spoil disposal program is as follows:"

After the last sentence add following sentence:

"The Soil Conservation Service and the Sponsor will jointly develop a spoil disposal plan for the project as required for each reach of construction".

Page 17 - Paragraph 2

Change last sentence to reflect a one year establishment period as specified in the Workplan Supplements.

Page 17 - Paragraph 4

Replace third sentence with the following: "Subsidence monuments will be included in project design and installed under the construction contract. Monitoring will be a project requirement borne jointly by the Sponsor and the Soil Conservation Service.

Page 18 - Paragraph 5

Delete entire paragraph referencing offsite drainage systems.

Page 19 - Paragraph 4

Delete the last four sentences and add the following:
 "The remaining mitigation of loss of wildlife habitat can be satisfied by acquisition of additional habitat by the Flood Control District of Maricopa County. Currently, 280 acres would be required. Actual mitigation requirement will be determined as of the advertisement date for construction of each reach".

Page 20 - Paragraph 1

Redefine "establishment period" to conform to comment on Page 17, Paragraph 2 and with Supplemental Watershed Plans.

Page 20 - Paragraph 2

After the first sentence add: "Disposal of sediment will be in accordance with sections of spoil disposal". Delete the remainder of the paragraph.

Page 22 - Paragraph 1

Change to show Gilbert as incorporated community.

Page 56 - last Paragraph

Change wording in last sentence: substitute "are" for "should be".

Page 57 - Paragraph 1

Change to show Weekes Wash as only structure in Buckhorn-Mesa Watershed outletting into RWCD Floodway.

Page 57 - Paragraphs 2-5

Simplify the wording for clarify. We suggest using the terms "30 year protection" and "100 year protection" and give reaches in terms of road crossing or "miles from road" for location.

Page 57 - Paragraph 6

Delete

Page 59 - Paragraph 7

In the first sentence add: "a maximum of"
preceding "945". Change second sentence to read:
"This includes a potential 280 that may be required
for wildlife habitat mitigation purposes".

Page 63 - Paragraph 2

Change to read as follows: "Provide an outlet for
the storm drainage systems that may be installed
upstream of the Floodway".

Page 63

Add new statement as follows: "Provide through
multiple use potential, increased public and
private recreation areas in floodway right-of-way".

Page 68 - Paragraph 1

Do not agree that first sentence is a correct
statement. Paragraph requires clarification.

MARICOPA COUNTY HIGHWAY DEPARTMENT

3325 WEST DURANGO STREET • PHOENIX, ARIZONA 85009

R. C. ESTERBROOKS, P.E.
COUNTY ENGINEER

F. H. LATHROP, P.E.
DEPUTY COUNTY ENGINEER



DATE September 1, 1977

MEMO TO Herb Donald, Chief Engineer & General Manager, Flood Control District

SUBJECT REVIEW AND COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT
FOR RWCD FLOODWAY

In your comments to the Soil Conservation Service regarding the Draft Environmental Impact Statement for RWCD Floodway, please include the requirements of the County Highway Department, that all roads now crossing the RWCD canal and proposed floodway shall be maintained by bridging the channel with a structure sufficient to carry four lanes of traffic.

R. C. ESTERBROOKS
ASSISTANT COUNTY MANAGER
AND COUNTY ENGINEER


F. H. Lathrop
Deputy County Engineer

FHL:mr

Enclosure #2



MARICOPA COUNTY PARKS AND RECREATION DEPARTMENT

4701 EAST WASHINGTON STREET, PHOENIX, ARIZONA 85034

ADMINISTRATION & PARKS 262-3711

RECREATION 262-3716

ROBERT H. MILNE • DIRECTOR

WILLIAM J. RICHWINE • ASS'T DIRECTOR

September 12, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
United States Department of Agriculture
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

The Maricopa County Parks and Recreation Department has reviewed the draft environmental impact statement for the Roosevelt Water Conservation District Floodway and has no comments on the material as presented. We would, however, appreciate receiving additional information regarding the Pass Mountain Dam construction and its impact on our Utery Mountain Park. We also express our continual concern for the beautification of all structures and for the use of the adjacent land for parks and recreation purposes, including hiking and riding trails.

Thank you for the opportunity to comment and review.

Sincerely,

R.H. Milne

Robert H. Milne
Director

M:R:s

C-53

PARKS AND RECREATION COMMISSION

ROCKNE ARNETT • CHAIRMAN

DALE K. DOMBEY

LEN JOHNSON

KE AUGUSTINE • VICE CHAIRMAN

CLARE FELSTEAD

CHESTER D. MCNAB

DONALD R. LIEM • SECRETARY

FRED M. GUIREY

SAM RAMIREZ

MARICOPA COUNTY PLANNING DEPARTMENT

300 County Administration Bldg.

111 S. 3rd Avenue, Phoenix, Arizona 85003

FLOOD CONTROL DISTRICT
RECEIVED



September 21, 1977

SEP 22 '77

MEMORANDUM

TO: Sid Brase, Flood Control District

FROM: Advance Planning Division *JB*

SUBJECT: ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY

<i>HB</i>	ENG	HYDRO
<i>JB</i>	ADMIN	LMGI
<i>JB</i>	C & D	SUSP
<i>JB</i>	LMGI	FILE
<i>JB</i>	DESTROY	
REMARKS		

We have reviewed the draft environmental impact statement for the Roosevelt Water Conservation District Floodway, and we have found that it addresses the impacts of the project very well. Several subjects, however, may need some clarification. They are the following:

- 1) Disposal sites for the excavated materials, especially for the area between Brown Road and Apache Boulevard. Specific disposal sites should be listed in the E.I.S., because they can have an effect on the area in which they are located.
- 2) Proposed floodway's impact on Leisure World: This is an important subject that should be discussed, since the floodway passes close to the development.
- 3) The wildlife populations lost during the construction phase of the floodway. These should be delineated along with the amount of time required to have the populations re-established. In addition, the report should specify any wildlife populations that will be incapable of regeneration.

Other than the above comments, we do not believe the project presents any adverse environmental affect as far as the planning department is concerned.

GM:cr

Enclosure #1



Pinal County Highway Department

ROBERT L. STRYKER, DIRECTOR

August 31, 1977

United States Department of Agriculture
Soil Conservation
3008 Federal Building
Phoenix, Arizona 85025

ATTN: Mr. Thomas G. Rockenbaugh
State Conservationist

RE: Draft Environmental Impact
Statement - Roosevelt Water
Conservation District Floodway.

Dear Mr. Rockenbaugh,

In reply to your letter of August 15, 1977, requesting comments on the above referenced item, this Department directs your attention to the following information:

In reviewing the Draft Environmental Statement for this project several statements are included which concern this Department.

On page 2 paragraph 2, following statement is made, "diversion of flood flows will adversely affect 132 acres of native vegetation on the Gila Indian Reservation." This is probably true in the project area, however flood flows will affect the Gila Indian Reservation across Pinal County and into Maricopa County some 20 to 30 miles distant from the terminus of the channel. The annual addition of 6700 acre feet of flood water into the Gila River, and onto the Gila Indian Reservation, plus the increased amount of suspended sedimentation (17 to 25 acre feet annually) which will be deposited into the Gila River will create considerably more flooding and destruction than this report indicates. True, the floodway will reduce erosion, flood plain scour, and sediment deposition in the area downslope of the floodway. However it will greatly increase erosion, flood plain scour, and sediment deposition downstream from the project on the Gila Indian Reservation.

On page 60, of the report, mention is made of a bridge approximately 12 miles downstream from the planned outlet of the floodway. This bridge is located at the intersection of the Gila River and the Phoenix - Maricopa Highway, which is a Federal Aid Secondary Highway in Pinal County. The average daily traffic on this roadway is in excess of 4,000 vehicles. During local storms in the valley to the southeast this bridge plus approximately $\frac{1}{4}$ mile of roadway are impassable due to floodwaters overtopping the roadway and bridge.

Thousands of dollars are spent after each storm removing sediment, debris, etc. from the channel and also from under the bridge.

The Gila River has no defined channel therefore the waters passing along the watercourse spread over miles of land. With the additional water, sediment, debris, etc. which will be added to the Gila problems downstream will greatly increase.

This Department would like to go on record as being opposed to this project. It is very apparent the report minimizes the amount of damage which will occur downstream on the Gila Indian Reservation. As the area along the project is urbanized additional storm drainage will be entered into the floodway and the acre feet into the Gila will increase.

Very truly yours

A handwritten signature in blue ink, appearing to read "Robert L. Stryker". The signature is fluid and cursive, with the first name "Robert" being particularly prominent.

Robert L. Stryker, Director
Pinal County Highway Department

RLS:kh

CC: Board of Supervisor
County Administrator
County Attorney
Planning and Zoning

ARIZONA



PUBLIC SERVICE COMPANY

P. O. BOX 21666 • PHOENIX, ARIZONA 85036

September 29, 1977

U. S. Department of Agriculture
Soil Conservation Service
Suite 326
Arizona Title Building
111 West Monroe Street
Phoenix, Arizona 85003

Attention: Mr. Thomas G. Rockenbaugh

Dear Mr. Rockenbaugh:

Re: Estimated Relocation Costs for A.P.S. Gas Facilities for Soil
Conservation Service Flood Control Channel (Revised Letter, Original
Letter Sent to Mr. Rexford Stone February 25, 1975)

Thank you for the plans of your proposed project. Our review is completed and in answer to your request, we submit the following estimates for those locations which apparently will require relocation of our facilities.

1. Apache Blvd. and Higley Road - Relocate 6" high pressure gas main, regulator station and 2" mains, \$42,364.00.
2. Williamsfield Road east of Power Road - Remove 4" high pressure gas main from bridge and install beneath flood control channel, and install regulator station and 2" - 4" main, \$13,815.00.
3. Germann Road and R.I.D. Canal - Relocate 6" high pressure gas main, \$27,360.00.

Total relocation costs for the items indicated is \$83,539.00.

We call attention to item 3, which was relocated in 1974. At the time, we were told the channel would be 6' deep and 96' wide. The plans which you recently provided indicated a channel 8' deep, approximately 200' wide.

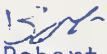
Please understand that the estimated costs given here are based on today's prices, and entirely new estimates must be given if your work is not done within a period of three months.

Mr. Thomas G. Rockenbaugh
September 29, 1977
Page 2

It is possible that there may be other conflicts, and they will be resolved when more complete plans are available.

We do appreciate your cooperation and will do our best to work with you on this project.

Sincerely,


Robert C. Hafler
Metro Engineering Services

RCH/gac

cc: Norm Colley



Natural Resource Conservation District

110 N. Oregon - Chandler, Arizona 85224

WALTER D. WHITE, Chairman
GEORGE BIRCHETT, Vice-Chairman
JIM MILLER, Secretary-Treasurer
KEN FOOKS, Board Member
LOUIS MOYERS, Board Member
DANA NELSON, Advisory Supervisor
DALE BLACKWATER, Advisory Supervisor

January 10, 1978

Mr. John Peterson
Asst. State Conservationist
Soil Conservation Service
3008 Federal Building
230 North First Avenue
Phoenix, Arizona 85025

Dear John,

Upon review of the Draft EIS for the Roosevelt Water Conservation District Floodway, we, the supervisors of the East Maricopa Natural Resource Conservation District, have these comments.

We believe this project to be a valuable one. It is well conceived and well designed and justly considers all interests of those affected both on and off the Gila Indian Reservation.

The only part of this project we disagree with is the need for wildlife habitat mitigation. We question whether this project will result in any loss in wildlife habitat. We feel that the Floodway will prevent much damage to irrigated cropland, an important forage area for indigenous species, and at the same time put additional water into the Gila River and thereby enhance feed production and cover for wildlife along the river bottom.

On page 53 to 55 of the Draft EIS, the reason for mitigation is shown as a loss in habitat in the triangle area on the Gila Reservation. The project will divert the flow of runoff & tailwater from this area into the Gila River. The triangle area is a man made habitat. Its present productivity is a result of extra water received mainly from irrigated lands with some runoff from the present RWCD floodway. Furthermore this area is one earmarked by the Gila River Indians to be brought into cultivation in the near future. Essentially we are taking water from one area and moving it to another area, and we feel that the overall impact on wildlife habitat will be, if anything, better, with the project.



Real Resource Conservation District

110 N. Oregon - Chandler, Arizona 85224

WALTER D. WHITE, Chairman
GEORGE BIRCHETT, Vice-Chairman
JIM MILLER, Secretary-Treasurer
KEN FOOKS, Board Member
LOUIS MOYERS, Board Member
DANA NELSON, Advisory Supervisor
DALE BLACKWATER, Advisory Supervisor

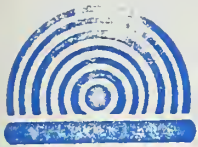
-2-

It is our opinion that the purchase of 280 acres of land elsewhere to mitigate losses due to the project is unnecessary and a waste of taxpayers money. We also wonder how the Game & Fish Department and Fish & Wildlife Service can demand land be acquired for lost habitat when the area affected is land over which they have nothing to say as far as habitat management.

cc: Governor Wesley Bolin
Senator Barry Goldwater
Senator Dennis DeConcini
Representative John Rhodes
Representative Morris Udall
Herb Donald - Maricopa County Flood Control District

Sincerely,

Jim Miller - Chairman
East Maricopa NRCD



GILA RIVER INDIAN COMMUNITY

SACATON, AZ. 85247

ADMINISTRATIVE OFFICES
P. O. BOX 97 — (602) 562-3311

October 12, 1977

ATTENTION: Mr. Thomas G. Rockenbaugh
State Conservationist

United States Department of Agriculture
Soil Conservation Service
3008 Federal Building
230 North First Avenue
Phoenix, Arizona 85025

SUBJECT: Draft Environmental Statement - Roosevelt
Water Conservation District Floodway Project

Dear Mr. Rockenbaugh:

In response to your formal request for comments on the above-named project, this is to notify you that the Tribal Resource Development Committee is currently conducting extensive review of the draft copy submitted.

While the Tribal Council has already gone on record (GR 179-73) in support of the project in principle, as you note on Page 69, we are now addressing our attention to certain specifics contained in the report. Further review will also take place at the Tribal Council level subsequent to this Committee review.

Serious concern has been expressed regarding the following factors:

- The present capacity of the Gila River is not adequate to accomodate sedimentation and debris, in addition to major flood waters. As stated on Page 55, the project will result in an annual increase in suspended sediment of eight acre-feet, irregardless of the occurrence of flood conditions. Such accumulated deposits will only function to further reduce the carrying capacity of Gila River during serious flooding. No mention is made in your report of any proposed maintenance or removal procedures to alleviate this inevitable result, nor a designation of responsibility or liability for any necessary maintenance methods.
- This Committee is concerned about the location specifics of any road bridges and railroad bridges scheduled for construction within the Reservation. We formally request the opportunity to participate in reviewing the sites for such structures, inasmuch as their location can have serious impact on access and other travel factors for residents of this Community.
- We request more specific information as to proposed location for depos-

its of any excavation materials connected with the entire project, insofar as they affect Reservation lands. The statement (Page 62) that "construction...will not result in any unusual land value changes" is casual and undocumented. Reservation land is perhaps the most valuable natural resource of this Community, and its appropriate utilization is of prime importance.

- As a result of the project, an additional flow of 6,700 acre-feet of water will be introduced in that reach between the outlet and St. John's Indian School (Pages 60 and 64), resulting in 10,000 acres being flooded more frequently. We submit that this is a very generalized, undocumented statement and, we feel, unrealistically conservative. Therefore, we wish to go on record in objection to this seriously adverse environmental impact. Since the Gila River is the designated "disposal area", in the context of this project, we would like to see more effective provisions delineated for the protection of the environment.

It is not our intent to oppose this project, but our comments reflect a serious concern as to the adequacy of the project plans in preventing critical and irreversable degradation of the environment of Gila River Indian Reservation. Again, we refer you to GR 179-73 (June 30, 1973): the intent of the legislation was to support the project and also "create minimum damage and utilization of reservation lands." We wish to be convinced that this will indeed occur. It is apparent that adequate maintenance provisions have been insufficiently addressed in terms of protecting the integrity of Tribal lands impacted by this project.

Sincerely,



Arnold Charles, Chairman
Resource Development Standing Committee

AC/cdt

cc: Alexander Lewis, Sr., Governor
Donald Antone, Sr., Lt. Governor



GILA RIVER INDIAN COMMUNITY

SACATON, AZ. 85247

DEPARTMENT OF PHYSICAL RESOURCES

P.O. BOX 6 — (602) 562-3311
(602) 963-4323

December 2, 1977

Mr. Thomas G. Rockenbaugh, State Conservationist
United States Department of Agriculture
Soil Conservation Service
3008 Federal Building
230 North First Street
Phoenix, AZ 85025

Ref: Review of Draft Environmental Statement -
Roosevelt Water Conservation District Floodway

Dear Mr. Rockenbaugh:

As per our letter to you dated October 14, 1977, and as discussed further with personnel of S.C.S., we are submitting these additional comments on the Draft E.I.S. for the R.W.C.D. Floodway project.

Mr. T. Niles Glasgow has assured me that our remarks will be included in any published future reports.

Our concern at this time is with unanswered questions in the Draft E.I.S. and the preliminary plans. Many of these questions have been discussed with the S.C.S. staff; however, we believe the questions and answers should be on record.

As stated on Page 5 of the Draft E.I.S., the present flood problems exist because of man-made conditions which have changed the natural flow over the past several decades. As more farm land was developed, and other construction took place - such as canals, roads, housing and industry - natural water courses were altered. Flood waters now cause damages and inundate areas in ever-increasing degrees.

The R.W.C.D. Floodway will attempt to solve some of these problems, both on and off the Gila River Indian Reservation; it is the conditions on G.R.I.C. lands with which we are concerned.

The factors described below are stated briefly in the Introduction and text; however, we believe they should be explained more fully and, if necessary, more detailed work performed.

QUEEN CREEK WATERSHED CONTROLS

Recent studies indicate additional problems with the design and construction of structures for control of flood water. Mr. Bill Mathews, Director, Arizona Water Commission (Flood Control Division), stated on November 16, 1977 that soils of low density had been encountered along the alignment, and that costs were rising to the point where they threaten the benefit-cost analysis.

No funds have yet been set aside for the Queen Creek structure, but construction has been scheduled for completion in Fiscal Year 1981.

The design capacity of the R.W.C.D. Floodway is 8,700 c.f.s. The 100-year flood, without Queen Creek controls and retention structures, would result in peak flow at about 19,000 c.f.s. in the R.W.C.D.; 8,700 c.f.s. would represent a flood frequency of 30 years.

The R.W.C.D. Floodway should be evaluated, and benefits and damages determined for all alternatives, with and without any anticipated up-stream controls.

GROUNDWATER RECHARGE

Groundwater recharge will be affected and flood water recovery will be reduced. Rights to existing water, locations of recovery, and changes in sedimentation and ground water levels should be considered. Diversion of sheet flow would be a natural consequence of the R.W.C.D. project; this effect should be evaluated.

WILDLIFE HABITAT

The area of wildlife habitat and usable range lands that would be affected is considerable. Present patterns of flooding, even in minor rains, contribute to the heavy riparian vegetation along stream beds. The economic value of these areas should be considered.

The report suggests that the loss of wildlife habitat be mitigated by establishment of an additional area forty (40) miles downstream and outside the Reservation boundaries. This area, besides not being readily accessible to G.R.I.C. residents, would not be under the jurisdiction of the Tribal Government. This entire evaluation of land value loss, changes in wildlife habitat, and land use changes in the project vicinity, plus the resulting effect on the residents of G.R.I.C., does not provide acceptable answers and should be reconsidered.

ACCESS ACROSS FLOODWAY

Other than crossings of existing State Highways #87 and #93, and the rerouting of Gilbert Road, no consideration is given to additional at-grade crossings. The traditional routes of travel for G.R.I.C. residents, and ease of access across the channel, should be included in the plans.

FUTURE FLOOD PREVENTION

No government agency or any other group has any program to study flood prevention specifically throughout the Reservation. The U.S. Corps of Engineers, traditionally charged with such flood control projects and studies, anticipate no future such analyses. Mr. Bill Worthington, U.S. Corps of Engineers, confirms information from Mr. Bill Mathews that the Corps will in general cease making Flood Plain Information studies in F.Y. 1977. Long range plans for flood plain studies should be confirmed at this time to specifically include Gila River Indian Reservation.

FLOODING FROM ALL SOURCES

Some additional design consideration should be made to include the most adverse

flood conditions. What is the effect down-stream when all watersheds contribute to maximum peak flow? What are the possible damages from flooding and the resulting sedimentation? To give a realistic evaluation of the effect of the R.W.C.D. Floodway, a complete hydrological study of the Gila River, from the Salt River to the east of the G.R.I.C. should be made, and it should assess effects of additional flows under all circumstances.

MAINTENANCE ON THE GILA RIVER CHANNEL

No provisions or commitments are included for any maintenance outside the R.O.W. limits of the floodway project, or down-stream from the end of the project.

ARCHEOLOGICAL SITES

All archeological reconnaissance surveys should be completed, and all required procedures complied with. Sites should be mapped, and mitigation plans developed and approved, prior to preparation of final plans.

ADVERSE EFFECTS

The statements (Pages 2 and 64) that adverse environmental impact would affect 132 acres of Reservation land are not adequately addressed. Much of this "triangle" area is designated as Project Land (arable but not previously cultivated) in the C.A.P. Definite Plan Report (1972); it is also a natural wildlife refuge.

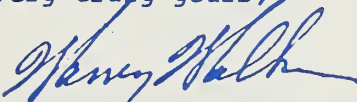
There appears conflict in the statements (Pages 63-64), "...improving wildlife habitat in the Gila River from the floodway outlet to St. Johns School" and the annual introduction of "...an additional 6,700 acre-feet of floodwater into the Gila River in the reach between the floodway outlet and the St. Johns Indian School". The addition of flood frequency affecting 10,000 acres of Reservation land (Page 64) will certainly result in inhibiting future development and the reduction of land value.

DISPOSAL AREAS

"Designated disposal areas" for unusable excavation material and construction spoil have not been identified. We would like to review any such sites in advance, as they related to G.R.I.C., not "immediately before construction" as stated on Page 16.

Thank you for the opportunity of commenting on this proposed project.

Very truly yours,



Warren Walker, P.E.
Director

cc: Governor Alexander Lewis, Sr.
Lt. Gov. Donald Antone, Sr.
Members of the Tribal Council
Mr. Kendall Cumming, B.I.A.
Mr. Lee Thompson, Director, P. & E.

SALT RIVER PROJECT

P.O. BOX 1980
PHOENIX, ARIZONA 85001



TELEPHONE 273-5900

October 13, 1977

Mr. Thomas G. Rockenbaugh
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
Room 3008, Federal Building
230 North First Avenue
Phoenix, AZ 85025

RE: ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY - DRAFT EIS

Dear Mr. Rockenbaugh:

The above-referenced Draft EIS has been reviewed by our Water Group, Power Engineering Department and Environmental Division and no significant comments were made. We find no apparent conflict with any current or planned SRP facility or activity.

Sincerely,

A handwritten signature in blue ink that reads "Glenn D. Harris".

Glenn D. Harris
Environmental Analyst

vem

Southern Pacific Transportation Company

Southern Pacific Building • One Market Plaza • San Francisco, California 94105

W. J. JONES
CHIEF ENGINEER

August 19, 1977

H. F. DULLY
ASSISTANT CHIEF
ENGINEER-MAINTENANCE
M. J. KARLOVIC
DISTRICT ENGINEER
J. B. VERNON
DISTRICT ENGINEER-HOUSTON
G. L. MURDOCK
DISTRICT ENGINEER

IN REPLY PLEASE REFER TO

Mr. Thomas G. Rockenbaugh
State Conservationist
United States Department of Agriculture
Soil Conservation Service
3008 Federal Building
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh:

This is in reference to your letter of August 15 transmitting a draft environmental impact statement filed with the Council on Environmental Quality for the Roosevelt Water Conservation District Floodway, Arizona.

We are forwarding the impact statement to our Division Engineer, D. B. Zumwalt in Tucson, whose territorial jurisdiction includes the area of the proposed floodway. Mr. Zumwalt will furnish his comments and recommendations directly to you after he has had opportunity to review the statement and its impact, if any, on our lines and operations.

Yours truly,



JAMES A. BLASDELL
7640 N. 10TH AVENUE
PHOENIX, ARIZONA 85021

October 11, 1977

Thomas G. Rockenbaugh;
State Conservationist
United States Department of Agriculture
Soil Conservation Service
Room 3008, Federal Building
230 North First Avenue
Phoenix, Arizona 85025

Dear Mr. Rockenbaugh;

In reviewing the Draft Environmental Impact Statement for the Roosevelt Water Conservation District Floodway it became apparent that there are a number of items which deserve further consideration. They are as follows:

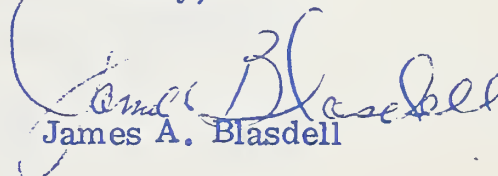
- 1) The Floodway, which of course will not be carrying water a great majority of the time, lends itself to use as a parkway and recreational area. The impact statement on page 63 under "Favorable Environmental Impacts" states that the project will "improve the health, welfare, and quality of living in the project area." This obviously would be greatly enhanced with the inclusion of a parkway into the project in those areas where people live in the immediate surrounding areas.
- 2) The project, as proposed, is going to have a greater visual impact than that which was acknowledged in the impact statement. The most extensive landscaping will be on each side of the road overpasses which will lessen the impact from the road, but do very little to offset the impact for those living in the area or using it for recreational purposes. Again, the impact statement states on page 60 that "The landscape design goal is to minimize the visual impact of the Floodway." To maximize the utilization of this otherwise idle area, and to further meet the previously mentioned landscape design goal, a park type area seems the logical solution.

- 3) On page 51 in the impact statement it is mentioned that "Recreation demand is greater than normally would be expected. Residential development, much of which is oriented toward retirement community accommodations, is expanding at a rapid rate." Recognizing this to be the case, a recreational park area would meet the increasing demand, which is being placed on projects of this nature, to provide for these types of activities. This type of retirement community development is becoming most pronounced along the Floodway north of the Apache trail where large developments have recently been completed, and where more are to follow in the near future.

The previous points should be given serious consideration both in the planning phase as well as in the ultimate construction of the project. These points were discussed in a meeting on September 27 of this year, with Herb Donald, S.H. Brase, Bill Jolly, Les Bond, John Savicky, and Bob Ward of the Maricopa County Flood Control District. It was the consensus of those present at this meeting that a park and recreational area should be established and that it would be beneficial to both the project and surrounding areas. It is our firm belief that steps should be taken to insure that the Floodway will be improved in this manner.

To that end, we have retained Marv Larson of American Engineering to prepare a cross-section enclosed herewith as an alternative means to transport the anticipated water flows. It is our feeling that this cross-section will better provide for the recreational and esthetic requirements referred to in this letter and the impact statement. Of particular interest to us as property owners is that section of the Floodway which extends north of the Apache Trail (Main Street) in the City of Mesa. This area is experiencing rapid growth and development, and the existing residents as well as those to come would benefit greatly from the recreational and esthetic improvements proposed in this letter.

Sincerely,


James A. Blasdell


Machrina P. Blasdell

enclosure

Morrison County Drainage Swale

$$\begin{aligned}
 Q_{\text{required}} &= 2000 \text{ cfs} \\
 Q &= \frac{1.49}{n} A [A]^{5/2} S^{1/2} \quad \text{depth} = 8 \text{ ft} \\
 &= \frac{1.49}{0.018} (875) \left(\frac{875}{252} \right)^{5/2} \sqrt{0.00015} \\
 &= 2023 \text{ cfs}
 \end{aligned}$$

Use 9' depth to assure 1 foot free board



Scale 1" = 30'

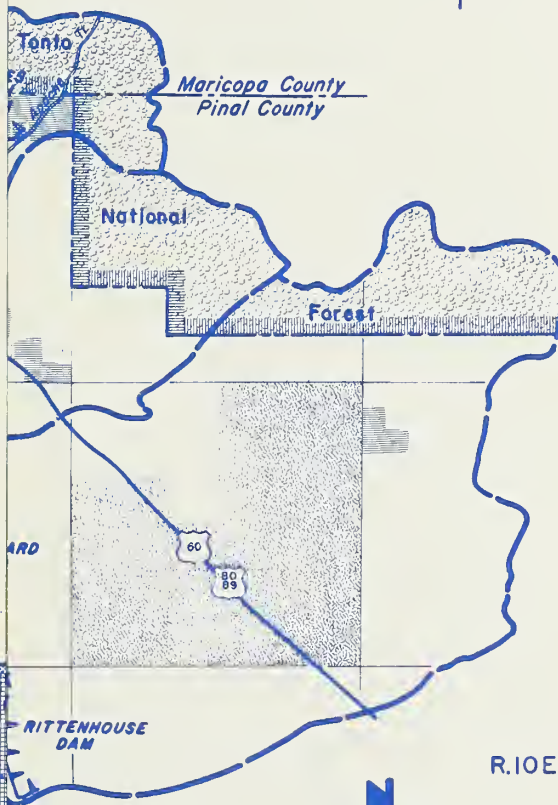
APPENDIX D

GENERAL LAND OWNERSHIP AND IRRIGATED CROPLANDS

SOIL CONSERVATION SERVICE

111°20'

T.2N.



T.1N.

T.1S.

R.10E.

T.2S.

R.9E.

R.2E.

T.3S.

ND OWNERSHIP AND IRRIGATED CROPLANDS

ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY MARICOPA AND PINAL COUNTIES, ARIZONA SEPTEMBER 1976

SOURCES:

PHIL RESOURCE LANDS — ARIZONA STATE LAND DEPARTMENT - NOV. 74
OF ARIZONA
CROPLAND — "CROPLAND ATLAS OF ARIZONA" OCT. 74

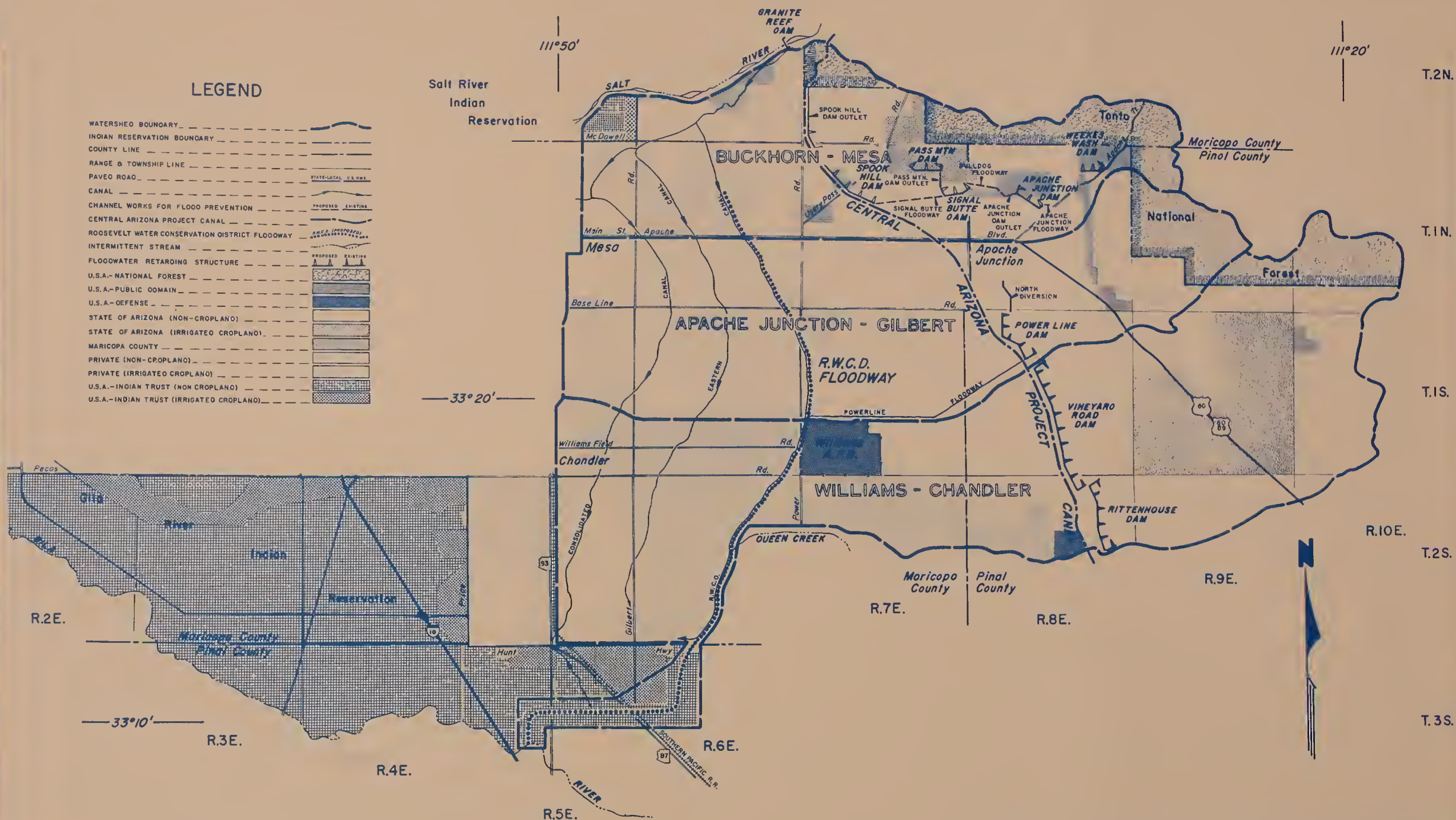


SCALE IN MILES



LEGEND

WATERSHED BOUNDARY	
INDIAN RESERVATION BOUNDARY	
COUNTY LINE	
RANGE & TOWNSHIP LINE	
PAVED ROAD	STATE-LOCAL U.S.H.W.
CANAL	
CHANNEL WORKS FOR FLOOD PREVENTION	PROPOSED EXISTING
CENTRAL ARIZONA PROJECT CANAL	
ROOSEVELT WATER CONSERVATION DISTRICT FLOODWAY	R.W.C.D. (PROPOSED) EXISTING
INTERMITTENT STREAM	
FLOODWATER RETARDING STRUCTURE	PROPOSED EXISTING
U.S.A.-NATIONAL FOREST	
U.S.A.-PUBLIC DOMAIN	
U.S.A.-DEFENSE	
STATE OF ARIZONA (NON-CROPLAND)	
STATE OF ARIZONA (IRRIGATED CROPLAND)	
MARICOPA COUNTY	
PRIVATE (NON-CROPLAND)	
PRIVATE (IRRIGATED CROPLAND)	
U.S.A.-INDIAN TRUST (NON CROPLAND)	
U.S.A.-INDIAN TRUST (IRRIGATED CROPLAND)	



LOCATION MAP

GENERAL LAND OWNERSHIP AND IRRIGATED CROPLANDS

ROOSEVELT WATER CONSERVATION
DISTRICT FLOODWAYMARICOPA AND PINAL COUNTIES, ARIZONA
SEPTEMBER 1976

SOURCES:

NATURAL RESOURCE LANDS — ARIZONA STATE LAND DEPARTMENT - NOV. 74
STATE OF ARIZONA — "CROPLAND ATLAS OF ARIZONA" - OCT. 74
IRRIGATED CROPLAND —



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